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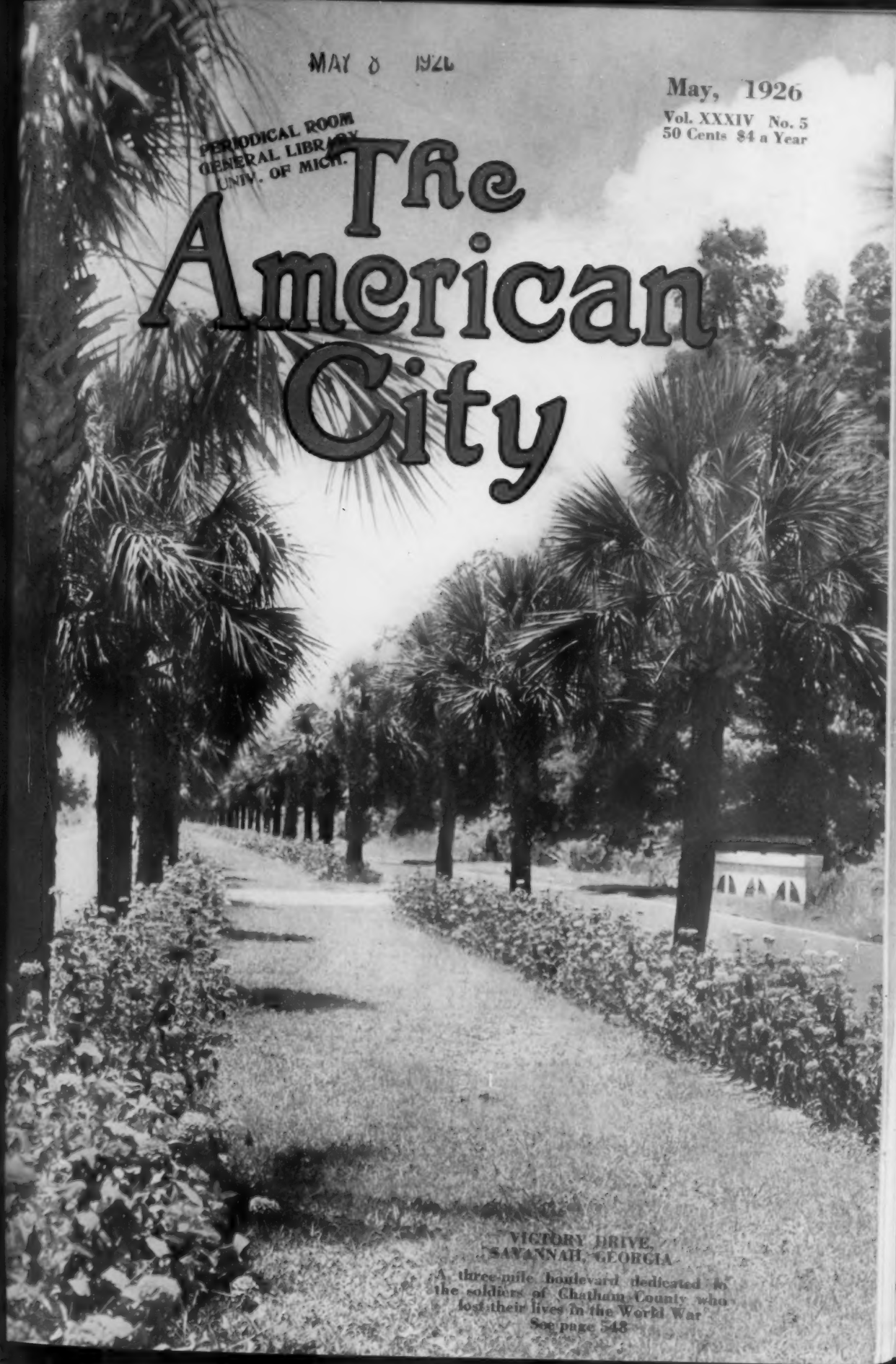
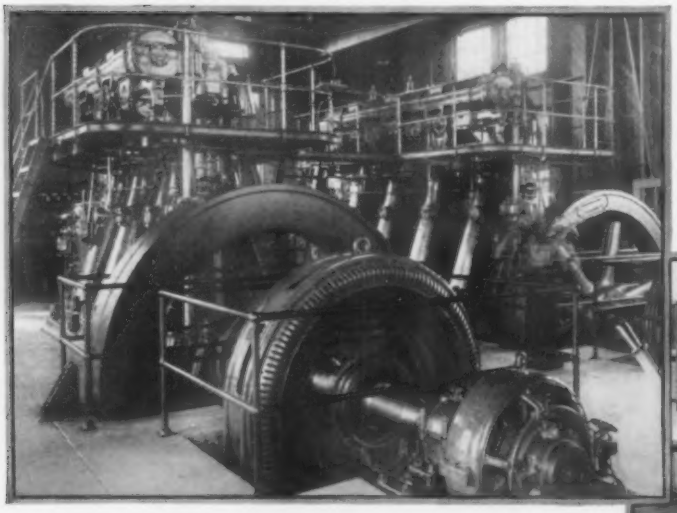


VICTORY DRIVE,
SAVANNAH, GEORGIA

A three-mile boulevard dedicated to the soldiers of Chatham County who lost their lives in the World War

See page 543

FULTON DIESEL



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MAY
1926

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What Really Is City Planning?

By Edward M. Bassett

Director, Legal Division, Regional Plan of New York and Its Environs

WHAT is city planning? Is city planning in the domain of the civil engineer, the architect, or the landscape architect? These questions are asked all over the country. One thing is certain—city planning and the city planner have come to the front. Every city has a dozen men, more or less, some officials and some just ordinary citizens, who are devoted to the new science of modern city planning. We have so-called definitions of city planning. But they always tell us the *aim* of city planning, or the *result* of it, or the *need* of it, or the *method* of it. They never tell us what city planning is. There is a National Conference on City Planning and an American City Planning Institute. And, queerly enough, you can hardly find two persons who agree on what *is* city planning.

The place of the architect is put to the fore by the architectural societies. Similarly, the place of the engineer is put to the fore by the engineering societies. Every one knows that landscape architects are mostly city planners. Some deplore the fact that ordinary uncertificated individuals seem often to qualify as city planners.

Before I add my mite to the great store of learning on this subject, let us consider a few peculiarities of city planning. Before one stops to think, he knows instinctively, or thinks that he knows, what city planning is. The word is self-explanatory. But the more he digs into the subject, the harder it is to define. One thing is rather clear—that the city plan is something that can be shown on a plan, or map. If it cannot be so shown, it is not part of the city plan. Moreover, one would not say that everything that can be shown on the map of the city is part of the city plan. Surely, hills, woods, buildings, and factories are not part of the city plan, although they can be mapped and of course they affect the city plan. Court-houses, capitols, rows of buildings, and the arrangement of shade trees show where lines will be drawn on the map, but the buildings and shade trees are no part of the city plan.

A second thought convinces one that the city plan is composed of intangibles. The draftsman's map, which precisely shows the city plan, consists of lines. They cannot be seen or touched on the ground itself. They are street lines, park boundaries, harbor lines, sites for public buildings, location rights for transportation facilities, and the boundaries of zoning districts. There is nothing strange about this. If we stop to think, we will admit at once that a cyclone that took away all the structures of a city would not also take away the city plan —although it might make desirable some changes in the plan. That is because the plan is composed of intangibles.

A Dynamic Map That Compels and Controls and Grows

A static map which shows the tangible things within the city is not the city plan. The city plan is a dynamic map—something that compels and controls, and that grows with enlightened public opinion crystallized into law.

Again, sometimes we hear that good city planning requires that the homes shall be of harmonious architecture, such as is brought about by the submission of plans to a community architect. Some say that good city planning requires carefully drawn private restric-

tions. Some say that laying out private golf courses or making groups of college buildings is city planning. But this cannot be so. For the parties to private restrictions can cancel them, the owners of private golf grounds can sell them for homes, and the trustees of the college can remove the buildings when and where they will. They are not part of the city plan, because individuals cannot obliterate the city plan according to their own will.

Land Areas Differing in Legal Quality

To go a little further, we notice that the only things shown on the city plan are land areas differing from one another in legal quality. The street land differs from the park land, the park land from the sites for public buildings. Different again are the districts shown on the zoning maps. The legal character of the land outside the bulkhead line is different from that inside.

"Beware," the engineer or the architect may say. "We are being insidiously led into the realm of the law. City planning is the product of the engineer or the architect or the landscape architect. Who ever heard of the law being the controlling element in city planning?"

But, strange as it may seem, the nubbin of the matter is that the actual city plan consists of the determination of land areas stamped with different characters by law. That power which does the stamping is the real city planner—that is, the community itself acting through its legislative body. Nothing is part of the actual city plan that does not exist under sanction of a statute. That is the way the community does its work in city planning. It may be advised by the engineer, the architect, and the landscape architect. It will always do well to take their advice. But, after all is said and done, it is the community acting through its legislative body that makes the actual city plan, however much it has been helped by its advisers. The advisers have no power to place the stamp of law on land areas.

For the City, *of* the City and *by* the City

So at last we have found the proper place of these professions in city planning. They are advisers to the community. If any one else can give just as good advice, that person's advice should be accepted, whether he is certificated and classified or not. It should not hurt the feelings of any of us, whether engineer, architect, landscape architect, economist, sociologist, or lawyer, to find out that it is the community that makes the city plan. That is why it is the *city* plan. It is not only made *for* the city and *of* the city, but it is made *by* the city. Private individuals as such cannot make it or change it or end it.

"What a useless and dreary discussion!" some will say. Well, something is accomplished if it shows the true relation of the municipal engineer, the structural engineer, the building architect, the landscape architect, the economist, and the lawyer to the city plan. It shows that after all they are all only advisers to the community, and they ought to see that the community has good advice before its agent, the city council, brings down its stamp on the land. Then, too, the stamp of the community on the land has a permanency. It makes for permanency to understand that private restrictions, private streets, and private parks are not part of the city plan. Every Roman forum that was ever stamped on a land area, whether in Italy, Germany, France, or England, exists today as a *public* open space if population has been continuous. The best adviser in city planning is he who knows everything about structures above the ground and under the ground, both public and private, who knows all about good design and scale of buildings, and who knows all about the needs of human beings under city conditions. He will advocate and try experiments in housing and recreation, model villages and satellite cities, but he should not forget that in the end it is the stamp of the community on land areas that is the consummation of city planning.

A Symposium on City Planning in Florida

The holding of the National Conference on City Planning in Florida last month has resulted in the suggestion that The American City could render an important service to the municipalities of Florida, and to other rapidly growing communities throughout the United States, by publishing a symposium in which the city planners who have recently visited Florida would answer these two questions:

1. What is the most important lesson which municipal officials, city planners, or realtors in other states can learn from the developments of the last two years in Florida?
2. What is the most valuable suggestion which you can offer to the leaders in municipal and civic affairs in Florida as a result of what you observed and learned on your recent trip?

Letters for this symposium will be welcome from all who have constructive suggestions to offer.

Road Maintenance Equipment---Part I

By Harry J. Kirk
Ohio State Highway Engineer

A RUSSELL ELEVATING GRADER ON STAGE CONSTRUCTION

THERE are certain things fundamental to success in purchasing equipment. The public official who buys the equipment must be honest. Salesmen sometimes become over-zealous. Many are willing to spend five dollars to make ten any time. There is no great harm in accepting a cigar or a luncheon now and then, but elaborate entertainment and junkets with lots of joy thrown in at the salesman's expense, compromise those accepting them and may become equivalent to accepting a bribe. Remember, all these things must be added to the selling price.

The public official having the power to decide the purchase of equipment must therefore be honest. He must also, frequently and with definite finality, be able to use that little word of two letters pronounced "No!" This quality is sometimes called "guts."

Another prerequisite to successful purchase of equipment is accurate knowledge of what is best to do the job planned. This is chiefly a problem of fact finding—facts about the job and facts about the equipment. With all due respect to salesmen, I might say that in purchasing equipment I place very little weight on the salesman's wind-jamming. Many have had no practical experience with the line they are selling. They have memorized a sales talk. That is all.

There is a good reason for this state of affairs. On account of the rapid change in highway conditions and allied industries, what is up to date today is out of date tomorrow and there are few salesmen who are in a position to have a fundamental knowledge of the line of road machinery they are selling. My own decisions, therefore, have been based chiefly on interviews with contractors, superintendents, and other men who have actually used the equipment in question.

A P & H ¾-YARD GASOLINE-DRIVEN SHOVEL EXCAVATING A SIDE HILL

A FORDSON MOWER COMBINATION WHICH QUICKLY CUTS WEEDS AT THE ROADSIDE

The ideal way to buy materials or equipment on public work is first to draw up detailed specifications, and then receive sealed bids from those able to furnish.

Take the case of materials such as stone, gravel, tar, and asphalt. We have specifications in great detail on these. We can take bids and make awards on the low price. It is easy to make tests and see that specifications are met in all particulars.

In the matter of equipment, however, we have no specifications, even for small tools, that will permit us to take bids and buy on price. And when we come to large equipment, this is a still bigger problem.

Take the matter of motor trucks, for example. Suppose you want to buy a 2-ton truck. About the best you can do is to make a few general requirements as to power, capacity, body, tires etc., and ask for bids requesting that detailed specifications be submitted with each bid. You can get a score of truck manufacturers to quote you a price, and each will claim his is the best buy at the price. No two trucks will be exactly alike, and there is much ground for difference of opinion as to the best "buy." It is obvious that under these conditions low price cannot be the controlling factor, because the price each quotes is for a different article. But the public official has to satisfy himself which offer best fits his needs.

This is the big difficulty in the purchase of equipment. The greatest help is a thorough knowledge, not only of the equipment, but of the job it is going to be called upon to do.

Organization for Equipment Repair

Five or six years ago the various state highway departments had turned over to them by the Federal Government large quantities of road-building equipment, particularly trucks. This necessitated facilities for receiving, storing, and distributing this equipment. Practically every state had to arrange for a central garage and storage depot.

Some state highway departments are still maintaining these central garages, others are decentralizing this activity. The tendency is to provide garages more or less elaborate for equipment repair in the several districts or divisions into which the state is divided, depending upon the quantity of machinery operated. I have heard arguments for both plans, and my own opinion is that the best arrangement is the abandonment of the centralized system of repairs for the whole state and organizing for this by districts over the state.

Practically all the war materials are distributed and there is no longer a need for large storage depots in the states. Ohio maintains a small garage at the state capital for repairs of central office cars only, and other special operations requiring a machine shop.

Each repair center should have installed a system of cost keeping, simple but effective. An examination should frequently be made to determine whether repairs are becoming excessive. Excessive upkeep may be due to poorly designed equipment, improper care by the operator, or the fact that the equipment is on work for which it is not fitted. When the cost of repairs begins to run excessively high, the time comes when the equipment should be traded in on new equipment or sold for junk. The disposal of junk or useless equipment on public work is always a source of trouble. Even though it were possible to get angels from heaven to take charge of its sale, some one would find fault. The best policy I have found is, wherever possible, to trade in old equipment as part of the purchase price of new equipment.

It pays to take good care of equipment. Too much equipment is left out in the open, exposed to the weather, and at the mercy of every thief. Adequate storage should be provided during the winter months. Frequent inspections should be made during the working season, and complete overhauling should be done during the winter season. It costs a lot to have a machine break down during the working season, and no money is better spent than in the forestalling of breakdowns.

Service by the Manufacturer

The Maintenance Group of the Mississippi Valley Conference of State Highway Depart-

ments at its last meeting showed great disgust at the service at present being given by road equipment manufacturers. There is much dissatisfaction at hold-up prices for parts and poor service on repair part orders.

Some companies send out a field man. In some cases this fellow thinks it is his chief duty to get the state's mechanics drunk. This is the exception, but it shows what a distorted idea some manufacturers have of what is meant by service. I believe it is good business for the road equipment manufacturer to send out a competent service man, not a salesman primarily, but a mechanic with much practical experience and good judgment.

Every manufacturer knows that low prices and big profits lie in quantity production. Hence he designs his equipment to meet a general need. His machine may not fit a particular job. A good service man can often suggest a slight and inexpensive change that will make a satisfied customer. He will thus be a help to the manufacturer and to the customer as well.

My own experience is that often the engineers who design machinery are too "uppish" to heed a change suggested either by their own mechanics or by outsiders. In other words, they do not know enough of the kind of work the machine has to do.

A Division Traveling Mechanic

Where much work is being done and a large amount of equipment is being used, my experience has been, in Ohio, that a traveling mechanic for a district or division can save his salary many times over. Many times the engineer in charge of maintenance is not mechanically inclined. All his time may be taken up with other organization duties, so that he cannot give the specialized attention that equipment needs.

Recently I stopped along the road to inspect a motor patrol grader. It had not been greased

A SPECIALLY DESIGNED CHUTE FOR DUMPING SMALL PILES OF STONE AT THE ROADSIDE

MOTOR-TRUCK TANK APPLYING TAR TO ROADSIDE

for a long time. Bolts were loose. It needed a general overhauling. The operator was careless. The superintendent pleaded ignorance. The grader was ordered into the division garage for repairs. A traveling mechanic, a fellow who is a hard worker and can be trusted, can do a wonderful amount of good in watching cases of this kind. He can spot idle equipment and send it where needed. He should be in charge of the division garage. He should have power to discipline any one found abusing equipment in any way, even to firing careless operators.

Standardization of Equipment

There are many reasons for standardizing equipment. With but one make of truck in a district, the truck drivers and mechanics learn how best to operate and repair it. Better service can be given because fewer repair parts need be carried to take care of all needs. I must say, however, that this is an ideal hard to realize on public work, especially if you have several firms manufacturing the same kind of equipment in your state.

Recommendations on Equipment

It is with great hesitancy that I take up the matter of making detailed recommendations on equipment. The thing that makes road work fascinating is its variety. Because topography and climate vary everywhere, so do road problems differ in their character and the nature of the equipment best adapted to their solution.

In many of the things I am about to say you may not agree with me, because you have in mind one set of conditions and I another. I, therefore, would ask that caution be used in following out the recommendations I am about to make.

Grading Equipment

Many states are carrying on a program of

AIR-COMPRESSOR OPERATING PAVING BREAKER IN CONCRETE REPAIR WORK

stage construction which is closely allied to maintenance work. In Ohio we completed 823 miles of this sort of work in 1925, and it has met with great popular approval. This operation has been carried out in outlying districts and the poorer counties where travel is not heavy. If such communities had to wait for $40,000 per mile roads, they would be in the mud for 25 years hence. We have given them an all-year road at an average cost of $3,000 per mile. The old road has been widened out and minor relocations made. Repairs have been made to bridges and culverts. The old road metal has been salvaged and local materials used wherever possible. On account of a large program outlined, we have found it economical to purchase heavy equipment. This stage construction grading merges into gravel or traffic-bound macadam maintenance. For grading operations we have found the following combinations of equipment most satisfactory.

In hilly country, 10-ton crawler-type tractors worked in pairs, one with a 12-foot blade, and the other immediately following with a 10-foot blade grader. On this sort of operation we prefer the leaning-wheel type of grader because it is free from side slipping, it moves the earth higher, and is more easily and quickly pulled out of the ditch. We prefer the track-laying type of tractor in all cases, because it is not so apt to tear up the road surface or get mired in bad places.

Under certain conditions in hilly country we are using gasoline shovels with ¾-cubic-yard buckets on crawler type running gear.

I look upon the gasoline shovel as one of the recent outstanding developments in road-building equipment for rural highways. There are several good shovels of this type on the market. It is far better than the old-time steam shovel for light shovel work, because of its lower operating costs. Where frequent moves are necessary, there is no bother with water lines or fuel transport problems. In coal-mining communities and oil well districts there is no trouble with bad water, as with steam shovels.

All road men are familiar with wheel and slip scrapers, the latter for short hauls on small jobs and the former for long end hauls. The wheel scraper, however, is not well adapted to stage construction operations because there is rarely room in the ditch for it to load, except on relocations.

In rolling or flat country other types of equipment have proved efficient. Where cuts are long and frequent turns are not necessary, we have found the small model of elevating grader most valuable. With a sufficient number of trucks, Fords with gravity dumps are good and will move an enormous amount of material at a small cost.

Under certain conditions I have never seen anything quite so efficient as a small elevating grader for cleaning ditches.

(To be concluded in the June issue)

BARBER-GREENE BELT CONVEYOR AND BUCKET LOADER UNIT AT GRAVEL STORAGE

Organizing a City's Play and Recreation Assets

By Jay B. Nash

Superintendent of Recreation, City of Oakland, Calif., and Director of Physical Education, Oakland Public Schools

MANY, if not most, of the cities of America are in a state of leisure-time bankruptcy. The liabilities which encourage this misuse of leisure time simply outnumber the assets that encourage the right use of leisure time.

What Are the Liabilities?

The liabilities are cramped living quarters, small backyards—or none at all, heavy traffic in the streets, cheap amusement centers where various kinds and types of imitative robbing, passive commercial recreation may be bought, and a growing tendency to be spectators rather than participants in life-giving activities.

One of the principal causes of the bankruptcy is the misuse of what assets are available. I venture to say that few cities in America use fifty per cent of their available assets. I venture to say also that the assets which are being used are seldom used with an efficiency of over fifty per cent; this makes a total efficiency for the entire city of twenty-five per cent. This is a very generous estimate, as ten per cent efficiency would more honestly picture the conditions in most cities.

What Are the Assets?

The assets are *municipal playgrounds* and *parks, school play yards,* available adaptable parts of all *public buildings, swimming pools, baths, libraries, armories, schools,* etc. No city will ever realize the extent of these assets until it sets itself the task of enumerating them.

What Other Assets Does a City Have?

In addition to the land and facilities belonging to the city, there exist facilities which may be leased for a nominal sum. Such facilities may consist of *fields for baseball and football, vacant tracts or lots, auditoriums, gymnasiums, club rooms,* etc. Public-spirited individuals and corporations would many times willingly turn the same over to the city for temporary use. These tracts the city could use without the installation of expensive permanent improvements.

In addition to those above, near big cities should be listed country roads, bridle-paths, trails, and open country.

What Are the Assets of the Individual Homes?

While many of the people in our cities are living in human packing-houses, the fact remains that America still lives in one- or two-family unit homes. We have simply not conceived the possibilities of play facilities in the home and backyard because of the fact that for centuries we have been used to the large open spaces.

A spare bedroom equipped with a folding bed, makes an excellent playroom; as does a part of a double garage. In a backyard space 20 x 30 feet, for the price of the average smoker's cigars for six months, can be placed play equipment for children between the ages of two and eight years, which will monopolize much of their spare time.

Of course, it will have to be assumed in this case that the curtains in the spare room, and the garbage can and ash-pit in the backyard, and the man's cigars, mean less to us than the life and happiness of our children.

What Other Assets Are There?

In addition to the facilities already enumerated, there is the large list of assets under control of semi-public agencies, such as *churches, lodges, improvement clubs, country clubs, athletic clubs, Boy Scouts, Camp Fire Girls, religious organizations devoted to the solving of young people's problems* and many other groups and institutions too numerous to mention. These organizations receive their support from the public, and profess—in most instances rightly so—that one of their objectives is that they serve the community by helping to solve the problem of the wholesome use of leisure time.

These assets should all become a part of the big plan.

These items suggest the assets. Before any city has a right to ask for more public money for lands and buildings, the community has a right to ask: "Are you using everything you have? Can all these assets be so organized

THE OAKLAND COOPERATIVE PLAN

The Oakland Plan involves primarily the Board of Education and the Board of Playground Directors. The two Boards agreed some years ago to center responsibility for the Department of Physical Education and the Recreation Department in one office, the title of the executive to be Superintendent of Recreation of the City of Oakland and Director of Physical Education in the Oakland Public Schools; the salary of this office to be shared.

No responsibility entrusted to one board is re-delegated to another board, so that there is no legal handicap in this plan. When this officer is on a school playground, he is responsible to the Board of Education through the Superintendent of Schools; and when on a municipal playground, he is responsible to the Board of Playground Directors.

When conducting activities in the parks or on property loaned by individuals or clubs, or in state or national parks, or the United States Forest Reserve, he is responsible in accordance with whatever agreement has been entered into by the governing boards.

EXECUTIVE STAFF

Superintendent of Recreation and Director of Physical Education
Oakland Public Schools
(Salary shared by the two Boards)

Paid by Board of Playground Directors
(Recreation Department)

- Assistant Superintendent of Recreation, Director of Boys' Activities
- Director of Girls' Activities
- Director of Educational Dramatics
- Director of Folk and Dramatic Dancing
- Director of Industrial Recreation
- Office Staff

Paid by the Board of Education
(School Department)

- Supervisor of Physical Education, junior and senior high school girls
- Supervisor of Physical Education, junior and senior high school boys
- Supervisor of Physical Education
- Office Staff

PLAYGROUND ADMINISTRATION

Both the municipal playgrounds and the school playgrounds are operated every day of the year

Municipal Playgrounds—11 Units

Funds supplied wholly by City Recreation Department

School Playgrounds—49 Units

Operated as nearly as possible by funds supplied, share and share alike, by the School and Recreation Departments:

Paid by Board of Playground Directors (Recreation Department) Funds supplied through City Budget		Paid by Board of Education (School Department) Funds supplied through County Budget
Pay salaries of playground directors from 9:30 A. M. to 5:30 P. M. on non-school playground hours, after school and summer vacations	Salaries	Pay salaries of playground directors from 3:15 to 5:15 P. M. on school days
Provide playground supplies for use during playground hours, after school and summer vacations	Playground Supplies	Provide playground supplies for use during school hours
Furnish one-half of crew of workmen for repair and upkeep of grounds	Workmen	Furnish one-half of crew of workmen for repair and upkeep of grounds
Provide large spaces on municipal units for school events, such as track meets, play days, regattas, etc.	Space and Equipment	Provide space and equipment for school yards—yards to be large enough for playgrounds
Provide extra staff for conduct of inter-school events, including marking of grounds, equipment, officials, etc.	Extra Staff	Provide janitorial service, care of grounds, year round

RECREATION ACTIVITIES

Recreation Department		School Department
Furnish supervisors for conduct of activities	**Evening Activities in School Gymnasiums**	Furnish light, heat, and janitorial service
Furnish twelve-oared boats on lake	**Aquatic Sports**	Furnish oars and supervision
Operate and maintain a costume room. Loan costumes without cost	**Costume Room**	Costumes used by schools
Furnish Director of Educational Dramatics and Director of Folk Dancing	**Educational Dramatics (including pageants, May Days, plays, etc.)**	Schools cooperate in connection with training children and conduct of activities
Give out permits each Monday morning at 8:30. Furnish fields, field houses, showers, dressing-rooms, etc.	**Baseball Fields**	Furnish school fields whenever yards are adapted
Maintained by Recreation Department. Practically self-sustaining	**Boys' and Girls' Camps**	Groups are organized in the schools

OTHER ACTIVITIES

Funds supplied wholly by city Recreation Department budget

GOLF COURSE
1—18-Hole Unit

An eighteen-hole golf course is administered by the Recreation Department and is made practically self-sustaining by a small fee.

FAMILY CAMPS

Family camps are maintained to which families go for summer vacations. They are practically self-sustaining.

PLAYGROUNDS IN THE PARKS
(Operated every day of the year)

Through special arrangements with the Board of Park Directors, facilities for small children are installed in the parks.

COOPERATION WITH INDUSTRIES

The Recreation Department furnishes one full-time individual to work with the Industrial Athletic Association of Oakland, a group of some sixty industries which have organized their various industrial units in an all-year program.

COOPERATION WITH UNITED STATES FOREST SERVICE

It is through this cooperation that the Department receives large tracts of land in the mountains for the conduct of children's and family camps.

COOPERATION WITH PRIVATE AND SEMI-PUBLIC GROUPS

The Recreation Department maintains a close affiliation with private and semi-public organizations, furnishing them in many instances facilities for camping, fireplaces for picnics, athletic fields for tournaments, evening gymnasiums for leagues, auditoriums with kitchens for evening parties, and assisting them in any other way possible. All of these organizations in turn assist the Recreation Department through the loan of their facilities, such as athletic fields, gymnasiums, auditoriums and swimming pools.

ORGANIZATION OF HOME PLAY

The Recreation Department maintains a department for the promotion of home play. The Department furnishes specifications and blueprints for equipping backyard playgrounds. This service is furnished through the medium of various women's clubs and Parent-Teacher Associations.

EVENING COMMUNITY CENTERS
(Operated every day of the year)

Operated by the Recreation Department for the purpose of supplying wholesome recreational facilities during the evening period.

SERVICE DEPARTMENT

The Recreation Department maintains a Service Department in addition to all the above outlined. This Service Department aims to answer all questions relative to recreation facilities or activities which may arise within the city. It furnishes blueprints, plans, and specifications in connection with all types of activities; also slides and moving-picture reels, and speakers on all subjects related to leisure-time topics. The Service Department, in addition to this, sends skilled workers to conduct play activities for children or family groups whenever a sufficiently large number of citizens desire such service.

that they function as a unit?"

Working Out Methods of Cooperation

This article is being written more or less in response to almost daily requests for information as to how the various assets above outlined can be drawn into a cooperative plan.

People are asking: "What is the recipe?"

Be assured there is no *simple recipe*—neither is there a *complex recipe*. One just cannot be given.

However, a few basic facts might be set down for guidance, but—the pie will have to be mixed and baked in each community. One of the reasons why cooperation is difficult is the legal statute contained in the court phrase, "delegatus non potest delegare," which, in short, is that delegated power cannot be redelegated. This applies to the subject at hand, for school boards, park boards, and playground boards, once delegated authority, cannot subdelegate it.

Since this delegation of power is impossible, methods of cooperation must be worked out along other lines.

The only way I see in which this can be worked out is, as one of our men has put it, *"the feet under the same table" plan.* We can all sit down together and say: "Here's the problem. What can we do?"

In this particular round table conference somebody might say something as follows:

"Ladies and Gentlemen:—This city which we represent has just one group of people for which play and recreation opportunities must be provided. This city has but one pocketbook. There are, of course, various taxing agencies and various private organizations reaching into this pocketbook, yet, regardless of the various bureaus, there is just one pocketbook. Therefore, how can we spend the money we have for the best interests of our city?"

It would, in other words, be just the same as bankrupt proceedings: Here's what we owe. Here's what we have. What can we do to make us a going concern?

In the field of play and recreation, this simply means very definitely settling down all the elements which should contribute and then working out a thoroughgoing method of cooperation.

The major cooperation of municipal departments will involve *schools, parks, and playgrounds.* These departments have in common many things:

1. They deal with the same children.

2. The revenue for support of the departments is from practically the same sources.

3. The departments are in many ways complements of each other, the playground and park departments of the city extending through the period of after-school hours, holidays, Saturdays and Sundays when schools are not in session.

The Board of Education has close contact with all of the children of the city. For use of the Physical Education Department, it is essential for them to have well-equipped play yards. To every one who has given the subject thought, it seems very inadvisable for the city playground department to attempt to duplicate the play space in parts of town where the school yards are of adequate size.

Where the city playground department provides space, it seems reasonable that it should be provided in parts of town lacking proper play space, and even adjacent to schools with inadequate yards.

The parks in turn are coming to be known as the "Playgrounds of the People" and have a real contribution to make in supplementing the small school and municipal playground by the acquisition of large open spaces. They should be responsible for all the parking strips around school and municipal playgrounds—even if it has to be done through the medium of an inter-departmental requisition.

This close cooperation avoids the possibility of having several city departments compete for the leisure time of the children and adults. It avoids having certain parts of town overequipped and other parts of town utterly neglected. It also avoids the expense and confusion of several overheads.

The Physical Education Department of the schools and the Municipal Playground Department of the city have the same ideals, namely:

Physical efficiency—to be promoted through exercise in the open air, health habits, etc.

Proper use of leisure time—to be promoted by habit-training in the youth and providing proper play and recreational opportunities for young and old

Citizenship training—to be promoted through the teaching of sportsmanship, fair play, team-work, courage, courtesy, and other desirable qualities

The Oakland cooperative plan, charted on pages 476 and 477, includes *home facilities, playrooms, backyards, school yards, municipal playgrounds, parks, state and national parks, United States Forest Service, industries, private and semi-public institutions.* In spite of this low per capita cost—about 75 cents—there are few families in the city that are not

touched with considerable regularity by the cooperative plan.

In a democracy, the words "all men" assume a very large place; in fact, *the test of real democracy is simply that no one is to be left out.* This is superbly stated in our Declaration of Independence, which sets forth that all men "are endowed by their Creator with certain inalienable rights, that among these are life, liberty and the pursuit of happiness." If this dream of a democracy is to be realized in this country, one of the essentials will be that *all men* have equal rights to the fulness of life that comes with the wholesome use of leisure time. One of the big steps toward this ideal of democracy is a big city cooperative plan whereby all the assets are properly functioning.

First State Highway Safety Committee Named

GOVERNOR A. G. POTHIER of Rhode Island has appointed a Rhode Island Committee on Street and Highway Safety, "committing to them the responsibility of carrying out the work and recommendations of the Conference in this state," according to information received by the office of the National Conference on Street and Highway Safety. This is the first state to take formal action on the recommendations and conclusions of the Conference.*

The members of this permanent committee are George R. Wellington, Elmer L. Hewitt, Everitte St. John Chaffee, William F. O'Neil, George L. Miner, Arthur A. Thomas, Ralph W. Eaton, Charles E. Redfern.

The North Dakota State Highway Commission has advised the Secretary of the National Conference that Governor A. G. Sorlie is calling a State Safety Conference for April 29 and 30, which is to be held at the state capital and will probably be attended by over 200 people. A state conference has been called in Michigan in May, and it is understood that plans are being formulated for a similar state conference in Illinois in the near future. According to a statement made by the Florida delegation to the National Conference, the Governor of that state contemplates calling a state conference within the next sixty days.

The National Conference on Street and Highway Safety at its recent meeting in Washington, March 23, 24, and 25, emphasized the importance of these state safety conferences as a means for carrying out the program adopted by the National Conference. At the close of the last session upon motion by Governor John G. Winant of New Hampshire a resolution was adopted unanimously, providing that "the members of this Conference from each state be hereby requested to serve as an Organization Committee for their respective states to promote the adoption of the Conference recommendations through state, regional, and local conferences or other appropriate organizations." In presenting the motion, Secretary Hoover said, " I welcome Governor Winant's motion that this Conference should be followed by state conferences devoted to the same purpose, having advantage of the long investigation and carefully worked out recommendations of this Conference."

* The consolidated final report of the Conference was published in full in the April number of THE AMERICAN CITY (beginning on page 380). Excerpts from several of the committee reports submitted to the Conference will be found in The Municipal Index for 1926, pages 422-429.

Tax Rates and Ratio of True Value to Assessed Value

SOME years ago to answer local inquiries the Detroit Bureau of Governmental Research began collecting the comparative property tax rates of larger American cities. The list of cities has grown until it now contains 215 municipalities, and includes the rates separately for city, school, county and state purposes.

Of course a mere statement of actual legal tax rates in each community would not be informing, because the basis of assessment varies. Some cities have a high tax rate but a low assessed value. Other cities assess at nearly 100 per cent of true value and have a correspondingly low rate.

For true comparative purposes it was therefore necessary to adjust the legal tax in accordance with an estimate of the ratio of true value to assessed value in each city. These estimated ratios are obtained by correspondence with chambers of commerce, real estate boards, and others in each city. The ratios are only averages, since individual properties in each city will be assessed some at higher and others at lower ratios than that given.

The following is the tabulation of the 13 cities having a population of 500,000 and over, in the order of the adjusted tax rate or actual tax burden:

City	Legal Rate per $1,000—All Purposes	Estimated Ratio of True to Assessed Value %	Comparative Rate
Chicago	$84.00	37½	$31.50
Pittsburgh	33.02	85	28.07
Baltimore	28.52	90	25.68
New York	26.76	92.5	24.75
Boston	24.70	100	24.70
Philadelphia	27.00	90	24.30
Milwaukee	31.60	76	24.00
Buffalo	35.65	66	23.77
Detroit	25.07	80	20.06
Los Angeles	37.70	50	18.85
Cleveland	21.90	85	18.62
St. Louis	24.70	75	18.53
San Francisco	34.70	50	17.35

Reprints of the entire tabulation as published in the *National Municipal Review* (setting forth in some detail the various factors affecting property taxes in the cities included) are available at the office of the Bureau, 316 East Jefferson Avenue, Detroit, Mich.

Stimulating the Morale of Municipal Employees

By Leonard D. White
Professor of Political Science, University of Chicago

ONE of the practical problems which are giving more and more concern to wide-awake city executives is how to keep the city officials and employees who are permanently engaged in city work from getting in a rut and how to prevent the development of misunderstandings, personal jealousies, and disagreements which tend to create a frame of mind in which the most efficient work cannot be done.

Ten years ago the problem of efficiency in municipal government was primarily thought of in terms of good organization, sound purchasing methods, approved technique in budget making, and careful selection of employees by a civil service commission. These improvements of the twentieth century are, without any question of first-rate importance, and municipal government has achieved notable improvements by reason of their wide adoption.

In more recent years, and particularly since the wide discussion of morale and personnel efficiency during and after the war, city executives are coming to see more clearly that great improvements in the efficiency of city government are to be expected from the maintenance of a high level of the personal efficiency of the staff of the various departments. The problem is rapidly defining itself in terms of the creation and maintenance of a total employment situation which will enable the city to secure, to hold, and to stimulate the best kind of city employee. Obviously, nearly every phase of the city's employment policy has a part to play in creating such an employment environment.

Some evidence has been brought together which indicates how an unfavorable employment situation may easily develop and how it may depress the morale of city employees, unless specific attention is given to the whole problem. A few months ago the Honorable William E. Dever, Mayor of Chicago, invited the writer to make a study of the Chicago employment situation from this point of view. The study revealed a wide range of conditions which depressed the initiative and confidence of city employees*. These conditions very largely grew out of the neglect of sound employment policy characteristic of an earlier administration.

Among these conditions may be noted the almost universal suspicion entertained by the city employees that favoritism and political influence were the chief factors which enabled one to get ahead in the city service. Merit and capacity was thought not to receive its due recognition. Owing to a lax administration of the well-known Chicago classification, "unequal pay for equal work" was characteristic of many branches of the city service. Discipline was extremely lax in many departments, although in others it was maintained at an admirable level. A general loss of initiative and unwillingness to take responsibility was characteristic of large groups of employees, a fact which was complicated by the lack of stimulating leadership in many departments. A lack of loyalty to the best interests of the city was observed in many instances. In short, the city service lacked the vigor, energy, drive, high sense of loyalty and devotion to public interest which ought to be characteristic of the public service in a city as large as Chicago.

Creating a Better Public Employment Environment

The suggestions in the accompanying article go somewhat beyond the usual scope of plans for the organization and administration of municipal government. They are based on the assumption that an important contribution to American municipal life and governmental efficiency can be made by providing the right kind of employment conditions and incentives to efficiency for the great mass of the public employees. This lesson has already been learned by the more progressive business firms, and it can be only a matter of time before the progressive municipalities develop this phase of personnel management. A notable contribution can be made by any city which aggressively takes the lead along such lines as these.

* Conditions of Municipal Employment in Chicago: a Study in Morale, published by the City Clerk, Chicago.

All this leads to the inqury, *"What steps can be taken to change the character of the employment situation so that a high type of municipal service can be developed?"* A number of suggestions may be made along this line. Of fundamental importance is the development of an equitable adjustment of salaries both as between individuals and as between one class of employment and another class of employment. The modern classification movement has gone very far toward providing an adequate solution of this problem, and it is of interest to note that the Chicago service is now being reclassified.

Individual Adjustment to Work

It is also very important to bring about as fine an individual adjustment to work as possible. Any one who observes the nearly uncritical means of selection which are still employed by civil service commissions quickly comes to the conclusion that few applicants for city employment really know what kind of work they will secure nor are they assisted in finding work properly adapted to their special qualifications. The public service calls aloud for the application of at least the elements of vocational guidance to secure the proper placement of the large number of persons who enter every year. Greater care in the original selection and placement will go far to eliminate the large number of misfits and to draw out more completely the latent possibilities of these people by putting them in proper adjustment to their work. Studies of industrial fatigue and of the effects of monotony in industry lead one to suspect that much will be gained in the public service by working out a system of periodical reassignments so far as may be possible within the general type of work performed. In industry the problem of individual adjustment has already been carried a long way under the skillful leadership of the psychologists and psychiatrists. It is too early to expect the public service to inquire into the dominant reveries of its employees, but industry has already probed into these unexplored fields in the endeavor to draw out the maximum possible attainment of each individual.

Keeping the Staff "Keyed Up"

Much advantage to the public service can be gained by providing an effective stimulus in keeping its staff "keyed up." All too frequently city employees find themselves caught in blind-alley employment with little or no opportunity for promotion. Public service could be made much more attractive to the better type of employee by arranging the promotion system so that a man could move with relative ease not only from department to department within the city, but from one jurisdiction to another jurisdiction along the same or related lines of work. This looks toward the creation of a clerical pool, to take an illustration which has already been worked out in some branches of the Federal Government.

Perhaps the most effective stimulus to sustained effort is to be found in the recognition of meritorious work. Very little attention indeed is now given to this phase of employment technique, except that negatively discipline is applied when employees fail to perform their work properly. On the positive and constructive side an unexplored field remains to be opened up through the recognition of meritorious service by city officials and employees. This may be accomplished through the medium of a city newspaper, by using the daily press, by a system of financial rewards such as employed in the Chicago Police Department, or by citation within the department or by the mayor.

The maintenance of a high morale in the city service requires also capable leadership. The city manager cities are probably, on the whole, the most progressive in this respect, but one need only recall the brilliant achievements of Morris L. Cooke in Philadelphia to realize that effective leadership can take place within the framework of any type of municipal government. In connection with the problem of effective leadership, it is probable that much can be accomplished by the organization within the departments, and perhaps within the city as a whole, of joint councils on which the employees will be directly represented. The development of such councils in the British civil service and the notable achievements which they have already accomplished lead one to believe that a similar result would be expected from the same plan in this country.

Incentives to Replace the Profit Motive

Fundamental to the whole problem of the morale of municipal employees is the provision for adequate motives to sustain the highest type of work. It is clear that the competitive environment and the gain incentive which dominate American industry play a relatively minor part in public affairs. In order to achieve the best possible service, public employees must have a motive which will create the same driving power in them which the profit motive gives to ambitious employees in

commercial enterprise. Students of municipal administration have not yet been able to find the equivalent of the competitive system, but something may be expected from the development of recognition, from wider opportunity for promotion, from the extension of the merit system to the higher positions, thus giving some worth-while prizes to the classified city employees, and from the achievement of professional recognition. Much may ultimately be expected also from the increasing efforts of educational, religious, and civic institutions throughout the United States to instill in the minds of youth the unselfish motive of service to the public.

Among many groups of public officials the motive to which they respond most readily is the desire for professional recognition. In the development of a sense of professionalism in the public service lies perhaps the greatest possibility of sustaining morale on levels heretofore unachieved. This will naturally be the product of a long evolution, but in some groups of city employees professional organization may now easily be brought about. The city managers, the bacteriologists, the chemists, the physicians, form so many nuclei of professional interest; the teachers have long had their professional organizations which are making constant contributions to the educational system. Far-sighted municipal executives will take the lead in developing some specific means of calling forth the professional interests of these groups. In Chicago the recommendation was made in favor of a Municipal Institute of Public Administration.

Finally, it may be suggested that a high morale among city employees can be adequately developed by giving attention to social organization. A brilliant Secretary of the Interior, Franklin K. Lane, took the initiative in developing a service club at Washington. This club included several thousand employees, was wholly supported by small dues, and gave the advantages of club life to the employees of the Department of the Interior. Within any city having a staff of 5,000 people there is full opportunity for the development of club life on an elaborate scale. In the smaller cities the same thing can be accomplished on a less comprehensive line.

EDITORIAL NOTE.—See also "The Personnel Problem in the Public Service," by Fred Telford, Chief of Staff, Bureau of Public Personnel Administration, page 261, THE AMERICAN CITY, March, 1926.

Realtor Organizations Turn Attention to Beautifying Downtown Districts

A SPRING cleaning of the city's business district to keep up with the standard of attractiveness of its parks and residential districts has just been started by the Kansas City Real Estate Board, which has appointed five committees to take charge of the improvement campaign, each committee to be appointed to a definite section of the downtown retail district. It is planned to eliminate unsightly conditions on vacant property, to clean up vacant storerooms, to banish overhead signs, and to remove the sidewalk display of merchandise. The campaign follows an appeal for greater orderliness and beauty in the business sections of American cities made at the annual convention of the National Association of Real Estate Boards in Detroit in June of last year by H. R. Ennis, of Kansas City, former president of the Association.

"Outside of the Fifth Avenue Improvement Association of New York City," Mr. Ennis said. "practically nothing has been accomplished toward the improvement of the business sections of our cities. Our residential districts, taken as a whole, are beautiful, but business districts in the average American city have not been created with the idea of beauty or dignity.

"Skyscrapers are placed side by side with dilapidated fire-traps, which may be dusty and uninviting and badly in need of repair, and, if such, are usually partially vacant. In addition, a half-dozen 'For Rent' signs may be plastered on windows and walls.

"Our cities today are struggling with an excessive use of signboards. I find in many places that the best streets are despoiled by signs of all sizes and colors, some partially over the sidewalk, some covering the sidewalk, and some running across the full width of the street. Streets which would otherwise be beautiful are made ugly and cheap, and become second- and third-rate streets. I have seen vacant lots filled with old automobiles and other rubbish. Advertising companies secure for a mere pittance the prominent vacant properties of our cities, roofs, and fronts of buildings, and other places of vantage.

"Our business sections are where we spend our business lives. From an esthetic point of view they should be equally as important as residential regions."

Property owners, tenants and agents on the various downtown streets will be organized to improve the general appearance of their thoroughfares. Leaders in each block will be selected to carry the campaign direct to the storekeepers. The business section has been divided in this way to keep the interest of the participants by stimulating competition.

A hundred palm trees will be planted along the railroad entrance to Corpus Christi, Texas, through the activity of the Corpus Christi Real Estate Board. The board is inaugurating a city-wide paint-up week.

—From the *National Real Estate Journal* for April 5, 1926.

These Men Have Been City Engineers for Ten Years or More in One City

C. F. W. Wallow
City Engineer of York, Pa., Since 1915

W. E. Sarver
City Engineer of Canton, Ohio, Since 1913

W. D. Willegerod
City Engineer of East Orange, N. J., Since 1911

G. H. Randall
City Engineer of Oshkosh, Wis., Since 1899

John Ericson
City Engineer of Chicago, Ill., Since 1897

Wallace Treichler
City Engineer of Rock Island, Ill., Since 1897

Chas. H. Reynolds
City Engineer of Fort Dodge, Ia., Since 1899

Thomas E. Collins
City Engineer of Elizabeth, N. J., Since 1913

E. M. Sneckenberger
City Engineer of Billings, Mont., Since 1915

(Additional photographs of city engineers who have occupied that position for ten years or more will be welcome for publication in a subsequent issue)

Asymmetric Street Lighting

By T. W. Rolph

ASSUME a city which should have the services of 500 policemen. With the full force on active duty, crime would be kept in check, traffic would be properly regulated, and the city adequately protected.

Now suppose that this city actually employs only 250 policemen. Suppose also that the force is inefficient, wasting half of its time and not distributed properly throughout the city. The result can easily be imagined. Crime and traffic accident would take a toll of economic loss far greater than the additional cost of an adequate and efficient police force. The inconvenience and suffering to individual citizens would constitute a further loss, less tangible, but no doubt even greater than the computed economic loss.

Perhaps no American city is so poorly protected as this. Yet substitute "light" for "policemen" in this story and you have an accurate picture of the actual conditions to-day in many American cities—we might almost say, in the typical American city. The amount of light supplied for street lighting is only approximately half of the amount necessary to obtain the full measure of protection which street lighting can give to a city. Even the light which is supplied is, to a large degree, wasted. Known and proved methods of effectively utilizing light are disregarded. Light which might contribute to greater safety on the street is lost in the skies and trees, or on lawns and houses. Many street lamps are placed so low that glare in the eye goes far to counterbalance the useful effect of light on the street. Glare and inefficiency are tolerated to an extraordinary degree in the typical American city today. This does not mean that there are no good street-lighting installations. There are many such installations in various cities, and there are a few cities whose complete lighting systems are excellent. Yet the typical condition is not far from that described above.

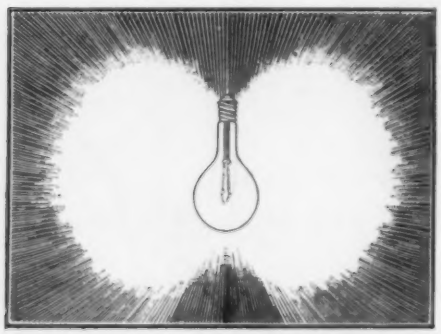


FIG. 1.—LIGHT DISTRIBUTION OF A BARE LAMP

FIG. 2.—A STREET LIGHTED WITH BARE LAMPS, OPAL GLOBES OR METAL REFLECTORS

Nor is it a mere flight of the imagination to substitute "light" for "policemen" in this picture of inadequate protection. It has well been said that "a street lamp is as good as a policeman." Light is, in fact, one of the most important aids in the protection of the modern city. Both crime and traffic accidents are greatly influenced by the character of the street lighting in any city.

Light vs. Crime and Traffic Accident

Light is a protection against crime. Again and again it has been shown that crime decreases when light on the street increases. A typical example is that of Cleveland, where the installation of adequate street lighting in the business district reduced crime over 40 per cent.

Light is a protection against traffic accident. Statistics have been gathered definitely showing the relation of light to traffic accident. It seems well established that in the typical American city today at least 17½ per cent of all traffic accidents which occur at night are due to inadequate street lighting.

It is entirely valid, therefore, to compare our present inadequately lighted cities to the city with an inadequate and inefficient police force. The difference is one of degree only. The present lack of light on the streets is just as expensive as lack of a portion of the police protection would be.

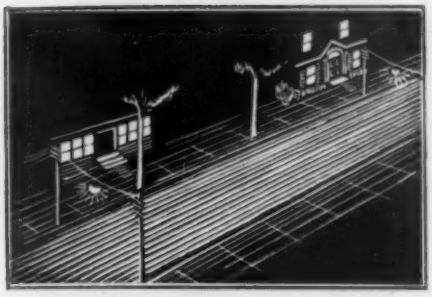


FIG. 3.—A STREET LIGHTED WITH SCIENTIFIC STREET-LIGHTING EQUIPMENT

Improved Lighting

What, then, can be done to improve this condition? There are three ways in which improvements may be brought about: first, more light may be provided; second, more efficient sreet-lighting equipment may be used; third, the street lighting may be installed in a more scientific manner.

It goes without saying that the first of these methods is of prime importance. If our police force should consist of 500 men, we cannot expect to police the city adequately with 250 men, no matter how efficient they may be. Nevertheless, the 250 men should be used as effectively as possible. Indeed, if the 500 men cannot be obtained immediately, it becomes doubly important to use the 250 in the best possible way.

Continuing the comparison of a street-lighting lamp to a policeman, let us see how well the lamp is performing its function. Figure 1 shows graphically the distribution of light obtained from a typical street-lighting lamp. The light is emitted in all directions. Half of it goes downward and half of it goes upward. The upward light is largely wasted. Since the street occupies only a portion of the area below the lamp, even the downward light is not all useful. Some of it is spilled on lawns and houses, where too much light does no good and is often objectionable. As a policeman, the bare lamp is about 25 per cent efficient. Yet that is not all of the story. The bare lamp produces a series of bright spots and dark areas on the street. Vision is difficult because the eye is constantly trying to adjust itself to one and then another intensity. And so even the 25 per cent of light which reaches the street is not spread out over the full street area, and the result is spotty illumination. In other words, the policeman does not cover his entire beat. He stays close to the center of it.

Now suppose the lamp is equipped with an opal or white glass diffusing globe, such as is often used for street lighting. The appearance is greatly improved. The lamp has become a street-lighting unit pleasing to look at; in other words, the policeman has acquired a more attractive uniform than he had before. But does he perform his duties any better? Quite the contrary. The diffusing globe absorbs some of the light and, as the name implies, it diffuses the remainder in all directions. Half of the emitted light still goes upward, and half of it is scattered downward in all directions. It is not distributed properly over the street and still gives spotty illumination; in fact, the distribution of light is practically the same as that of a bare lamp, and the amount of light is less. As a policeman, the lamp with a diffusing globe is still only about 25 per cent efficient and he does not cover his beat; he still sticks close to the center of it.

Suppose, however, a metal reflector is used over the lamp in order to redirect some of the upward light down toward the street. Here is obviously an improvement in efficiency. A considerably greater amount of the light of the lamp now reaches the street. Yet the light is still poorly distributed over the street. There is more light under the lamp, but comparative darkness half-way between lamps. The illumination is spotty. As a policeman, the lamp with metal reflector is more efficient than the bare lamp, but he still does not cover his beat; he still stays close to the center of it.

Figure 2 shows the general effect obtained when a street is lighted with bare lamps, lamps equipped with opal globes, or lamps equipped with metal reflectors.

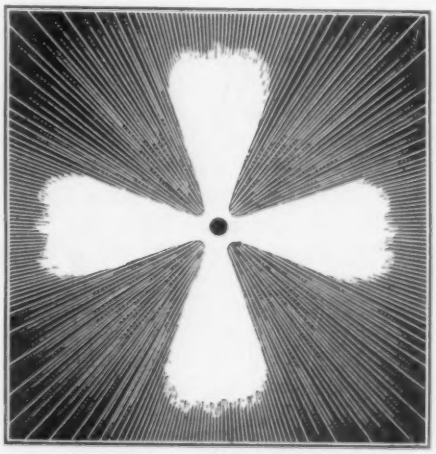


FIG. 4.—LIGHT DISTRIBUTION OF THE 4-WAY REFRACTOR, LOOKING DOWN FROM DIRECTLY ABOVE

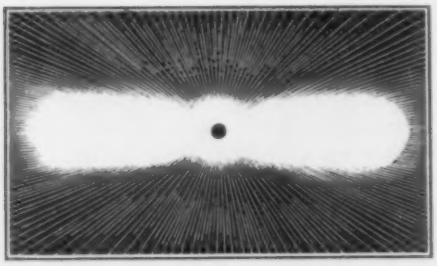


FIG. 5.—LIGHT DISTRIBUTION OF THE 2-WAY REFRACTOR, LOOKING DOWN FROM DIRECTLY ABOVE

Light Can Be Redirected

Now, let us surround the lamp with equipment designed to redirect and distribute the light. The greater part of the upward light is now turned downward; the excess light on lawns and houses is turned out toward the street; and sufficient light is directed far up and down the street to illuminate properly the street area between lamps. Figure 3 shows the general effect obtained. The policeman has become efficient and he covers the full length of his beat.

What Is Asymmetric Lighting?

Within the last few years the idea of asymmetric street lighting has come strongly to the front. It is an idea which promises to be a definite and very considerable contribution to public safety. Asymmetric street lighting means more light on the street; it means better-lighted streets—streets that are safer for traffic and better protected from crime.

The bare lamp gives a symmetrical distribution of light about the vertical axis. Before the development of asymmetric lighting, street-lighting equipment made no modification of this symmetrical feature. It turned the light downward or upward to give a very different and often much more efficient distribution of light, but it made no redestribution of light in lateral or sideways directions. The complete light-unit still gave a symmetrical distribution of light about the vertical axis. Therefore, a point on the lawn at a given distance from the light unit received the same light as a point on the street at an equal distance.

Asymmetric street lighting corrects this waste of light. Asymmetric means not symmetrical. It means that the distribution of light about the vertical axis is no longer symmetrical. Asymmetric street lighting sends to the street the light which would otherwise be delivered in too great a quantity toward the lawns and houses.

Asymmetric Lighting Not New

The idea is not new. It is almost as old as lighting itself. The old kerosene lamp with a tin reflector at one side of it was an asymmetric lighting-unit, although a very inefficient one.

Asymmetric lighting-units have been in common use for a long time in many fields of illumination, such as show window lighting, desk lighting, and others. The automobile headlight is an example of an asymmetric lighting-unit. Even street lighting-units of the asymmetric type were made many years ago, but they were not at that time a practical success. The present vogue of asymmetric street lighting started when inter-city highways began to be lighted, about four years ago, but it gained little headway until applied to city street lighting. The first asymmetric ornamental street lighing was installed on Sheridan Road, Chicago, and lighted in December, 1923. Several non-ornamental asymmetric installations were made at about the same time, and since then the spread of the asymmetric idea has been very rapid.

Light may be redirected by reflection or by refraction. In street-lighting practice, refracting equipment has proved to be much more serviceable than reflecting equipment. Refractors for street lighting have been developed to a high state of perfection, and the new asymmetric types of street lighting units depend upon refractors to obtain the special distributions of light.

For non-ornamental lighting with units mounted over the center of the street, there are 4-way and 2-way refractors. For ornamental lighting, with units mounted at the side of the street, there are refractors which turn the light out away from the lawns and houses.

Figure 4 shows graphically the light distribution of the 4-way refractor, looking down from directly above, and Figure 5 shows the light distribution of the 2-way refractor look-

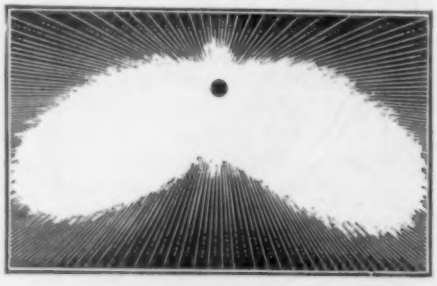


FIG. 6.—LIGHT DISTRIBUTION OF THE BI-LUX REFRACTOR, LOOKING DOWN FROM DIRECTLY ABOVE

ing down from above. Here is a striking illustration of the effective light control which may be obtained with prisms. These two refractors are identical in shape and size and look exactly alike, except to an observer at close range; yet they give widely different light distributions, due to the difference in the prisms.

The 4-way and the 2-way refractors form the basis for non-ornamental street-lighting systems more efficient, more effective, and more useful than those which have been employed in the past. The 4-way refractor is used at street intersections. The 2-way refractor is used between street intersections when blocks are too long to be lighted effectively by a lamp at the intersection only. A typical good installation for residence streets, carrying local traffic only, would be as follows:

Lamp size—4,000-lumen, 400-candlepower
Type of refractor—4-way and 2-way
Type of fixture—dust-tight
Mounting height—25 feet
Spacing—200 to 300 feet

The most desirable spacing is in the neighborhood of 8 times the mounting height, or 200 feet, with lamp set in refractor to give maximum candlepower at 75°, or 15° below the horizontal. A more economical spacing, and one which still gives excellent results, is 12 times the mounting height, or 300 feet, with lamp set in refractor at 80°, or 10° below the horizontal.

Such an installation of 4-way and 2-way refractors, carried throughout the entire residence district of a city, provides fully adequate street lighting for light traffic. Thoroughfares must have more light because they carry much more traffic than the typical residence street. Business districts must be still better lighted, and they are the first part of the city to deserve ornamental treatment.

Asymmetric Lighting in Business Districts

For thoroughfares and business districts, the asymmetric street-lighting units at present available use either the Bi-lux refractor or the asymmetric dome refractor. Figure 6 shows the characteristic distribution of light by the Bi-Lux refractor, looking down from directly above. Figure 7 shows the characteristic distribution of the asymmetric dome refractor, looking down from directly above.

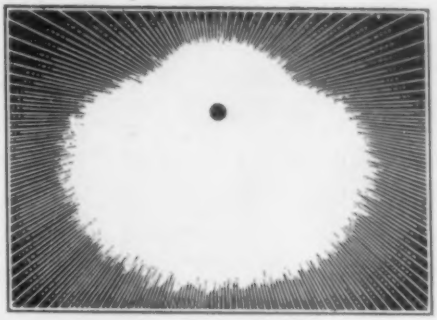


FIG. 7.—LIGHT DISTRIBUTION OF THE ASYMMETRIC DOME REFRACTOR, LOOKING DOWN FROM DIRECTLY ABOVE

The Bi-Lux and asymmetric dome refractors are used inside ornamental globes or lanterns made of glass which diffuses the light only slightly. Complete diffusion such as obtained with white glass would destroy the effective distribution obtained from the refractor. A slight degree of diffusion gives an excellent appearance and allows the refractor to perform its function efficiently. An unlimited variety of ornamental designs may be made using the same internal refractor.

It may be thought that the asymmetric idea will reduce street-lighting costs. Such is not the case, however. Almost without exception, in our American cities today, it is to the advantage of the public to use any gain in efficiency to improve street-lighting results, rather than to reduce street-lighting costs. The average street-lighting system today is inadequate. The economic loss due to this condition is very considerable. Street-lighting expenditures should be increased. It is expensive not to increase them. The asymmetric idea cannot take the place of this increase, and much less can it justify a decrease. What it can do is to make the necessary increase in expenditure somewhat less than it otherwise would be. Asymmetric street lighting brings us closer to the day when our streets will be as safe by night as they are by day.

ACKNOWLEDGMENT.—From a paper read before the American Society for Municipal Improvements, at Des Moines, Iowa.

FIRE WASTE CONTEST RESULTS

The Chamber of Commerce of the United States has announced the results of the fire waste contest for 1925 conducted by its fire waste council. Portland, Ore., wins the prize in cities of the first class; Long Beach, Calif., in Class 2; Battle Creek, Mich., in Class 3; and Albany, Ga., in Class 4. Albany won the Class 4 prize in 1924 also, and the grand prize for 1925.

CLEARING A ROAD DRIFTED WITH SNOW

At left, road cleared by Mead-Morrison tractor. Center, making the second cut. At right, breaking up a 4-foot drift

Cost of Snow Removal by Tractors

By E. A. Terhune, Jr., C. E.

THERE has been much said about the practicability and economy of using tractors for snow removal in towns and cities, and there seems to be a universal demand for definite facts and figures as to the cost of such a method. Like a great many other processes in their initial stages, it has been found with tractors on snow removal that experience is the truest teacher of the cost of this work, and not theoretical calculations based on certain ideal conditions (conditions in two cities or towns are never alike) nor the apparently final figures issued by certain towns, cities, counties, or even the Federal Government, as to the exact expenditures during the season, deducting from these expenditures the exact cost per mile for removing snow in that locality.

The answer to the cost of snow removal in brief is this. There are so many variables involved which are different for every city and town in the country that a blind statement cannot be made that it costs so much per mile per season to plow snow in one locality and have this applicable to another. The true method of arriving at the real cost is by consideration of these variables in a formula which begins with some basic unit, which is universally the same in tractor snow removal. This unit is the cost of tractor operation per mile.

Widths of Road Vary

The writer had occasion to get reports from various towns, counties, and Federal authorities which gave the cost of snow removal per mile per season ranging anywhere from $26 to over $200. The diversity of these figures indicates the uselessness of applying them to the conditions of various towns and cities, since the unit taken in these cases has been the cost of removing snow per mile of road rather than the cost of operating a tractor per running mile. It is evident that in the first case the mile of road is such a variable that the basic unit gives nothing definite to start on. Naturally, the cost of removing snow for a mile of road in a big city on a boulevard 100 feet wide is going to cost more than removing snow on a mile of back road in a country town, where the width of the road is but 12 or 15 feet, and where one trip through by the tractor suffices, whereas on the boulevard it may be necessary to go up and down several times to obtain the proper width. Naturally, the cost of opening up the boulevard, where the tractor has to go up and down several times for each mile of road, is going to be nearer $200 per mile of road, while opening up a mile of country road would be nearer to $26 per mile of road.

Snowfall Varies Greatly

Here, again, an error is made by relating a mile of road with the cost of opening that mile of road for the season. It is evident that snow conditions are widely different in various localities, ranging from the southern edge of the snow belt to the northern edge, and from the east coast to the interior, where in one place there may be five good storms a season, and in another place ten storms a season. The

accurate method is to begin with the right unit, which is the cost of operating a tractor per running mile.

Formula Embraces All Variables

The variable factors to consider are these:

1. Number of miles of road in a town
2. Average width of the streets
3. Average number of storms per season (as shown over a period of several years)
4. Peculiarities of the road system as affecting drifting conditions
5. Cost of operating a tractor, including gasoline, oil, storage, repairs, depreciation on machine, and interest on money

In fact, a formula for snow removal in any particular town may be obtained reasonably accurately as follows:

$$C = (N + R + T + W) \times S \times O + I + D$$

This formula, although having rather a complicated appearance, is exact and simple when one considers the legend of these letters as follows:

C = total cost of snow removal per season.
N = number of miles of road in a town.
R = extra number of miles tractor runs over these roads per storm for one complete circuit (which includes the necessary turning back over some roads because a continuous circuit is impossible).
T = extra number of miles which a tractor will run over the roads per storm to give the necessary width.
W = extra number of miles tractor will run over the roads per storm to handle drifting, due to the wind blowing after the storm ceases.
S = average number of storms in that locality as shown from several years' reports obtainable from the Weather Bureau.
O = operating cost per mile of tractor.
I = interest on money.
D = depreciation.

Light and Heavy Snow

One factor which is often held up as one of importance is that of the depth of the snow or the weight of the snow (whether it is light or whether it is wet and heavy). These two factors are not vital factors in figuring the cost of snow removal by tractor, for the reason that these items are to be borne in mind when one considers the cost of operating the tractor per mile. This operating cost will make allowance for these items in figuring the average speed of a tractor per mile for snow plowing, in just the same way as one figures the gas consumption in the speed of an automobile, giving consideration to traffic conditions and hills. A car may go 45 miles per hour for most of the time while covering a 100-mile trip, but because of hills and traffic the average speed in that distance may be thirty miles per hour. By the same token, a tractor having a speed of 6 miles per hour on high gear may do all of its snow plowing, including drifts and idling, at an average of 4 miles per hour because of these various factors which reduce the high speed average.

Application of Formula

To give a concrete application of this formula, let us assume that a certain town has 50 miles of road, and that the layout of these roads is such that for a tractor to cover the entire 50 miles, even with the most careful planning, it would be necessary for the machine to go back over its course and cover an extra 25 miles to go over the 50 miles of roads once. Again, let us assume that in this particular town, 25 miles of road are back country roads of about 15 feet width; also that there are 15 miles of secondary highways which are 30 feet wide; and that the remaining 10 miles of road are state roads of 60 feet width. To go full width on all these roads, it would be necessary to go over the back roads but once, making 25 miles of travel (no extra mileage); to widen out the 30-foot roads full width, it would be necessary to go over these roads three times (30 extra miles) making 45 miles of travel; and to open up the state roads it would be necessary to go over them five times, making 50 miles of travel (40 extra miles). The total travel, therefore, to open up these roads full width would be 120 miles, of which the extra travel is 70 miles. We can assume under average conditions that this town will require the tractor to run an additional 10 per cent of the net road mileage to clear out a few places where drifting occurs and the wind fills the snow in again after the snow ceases to fall. The amount of this work, of course, depends to a large extent on the nature of the roads and also on the preparation given before the snow season by erecting snow-fences, and is easily estimated for each particular town.

We will assume also that there is an average of eight storms a season requiring the use of the tractor. For figuring the operating cost of the equipment, let us take for example the Mead-Morrison "55" Tractor with which the writer is acquainted. This machine handles all but heavy drifts on high gear at 6 miles per hour, and considering the heavy drift-breaking, and other time out as above stated, the average snow plowing speed under all conditions would easily be 4 miles per hour. The machine burns less than 3 gallons of gas per hour, and a quart of oil in a 12-hour day. The cost of this fuel is therefore about 75 cents per hour, making an excessive allowance for gas and oil.

The cost of the operator will be figured at 60 cents per hour. The total of these items of gas, oil and operator comes to $1.35 per hour.

From the manufacturer's statistics and experience it has been found that an allowance of 15 cents per hour is widely ample to cover the items of repairs, storage, and other inci-

dentals. This brings the cost to $1.50 per hour for operating the tractor with an average speed under all conditions of 4 miles per hour, giving a cost of 37½ cents per mile, which in this example we will consider as 40 cents.

Interest on the money invested in the machine is $342, when figured at 6 per cent. Depreciation as shown by the manufacturer's records is 12½ per cent, or the amount of $713.

Using the above formula, therefore:

$$C = \underset{(N)}{(50} + \underset{(R)}{25} + \underset{(T)}{70} + \underset{(W)}{5)} \times \underset{(S)}{(8 \times .40)} + \underset{(I)}{(\$342} + \underset{(D)}{\$713)}$$

This reduces as follows:

$$C = 150 \times \$3.20 + \$1{,}055.$$

Therefore: $C = \$480 + \$1{,}055 = \$1{,}535$.

Since the above figures include every factor which must be dealt with in the cost of snow removal as well as variables included in the road system of any town, and considering also that the operation of the tractor is over 50 miles of road system, it becomes evident that the ownership and operation, and therefore the entire cost of snow removal for the town per season is practically this exact amount, subject to such variations in any other towns as the above variables may warrant for local application.

The result of this computation not only gives a reasonable cost as worked out in various localities, but also has been borne out in actual experience by those who have kept track of what it has cost them for a season of snow removal by tractor when run over approximately as many miles as we have included above. Such a definite and accurate system of figuring the cost of snow removal for any particular town or city means an added advantage to that town or city which uses such snow-plowing equipment.

Instead of the old-fashioned method of guessing what the cost will be and appropriating either far too much money, or, as in most cases, so little that when the time comes the funds are not nearly sufficient, we have in this instance a method that each town may count on and figure in its budget with reasonable confidence of its accuracy.

The elimination of this guesswork should prove of considerable assistance to highway commissioners, finance boards, boards of selectmen, and, in fact, any group which has to determine the best methods for snow removal and estimate the cost thereof.

Laying Underground Cable for Street Lighting in St. Louis

A CHICAGO contractor named A. M. Ryckoff has made use of a western agricultural implement for laying cable in the streets of St. Louis at a great reduction in cost as compared with ordinary methods, in connection with a $1,250,000 contract for electric street-lighting extension.

The implement used is known in irrigated farming districts of the West as a Killefer subsoiler. It consists of a heavy knife or blade which penetrates to a depth of from 12 to 24 inches and in this instance was hauled by a 5-ton Caterpillar tractor. The cable was attached to the blade of the subsoiler and paid out from a reel as the plow advanced. In this manner 240 feet of cable was laid under a brick sidewalk in 6 minutes.

The cable was placed under the sidewalk as close to the curb as possible. With the cable attached to the knife the tractor pulled the blade through the brick. Earth and brick fragments fell back into place behind the knife and workmen followed, tamping the earth and relaying the brick. The cable was laid under concrete sidewalk with equal ease, with the exception that in this case a crew with pneumatic hammers hewed a line through the cement in advance of the tractor. A cement crew followed, making repairs.

KILLEFER DRAWN BY CATERPILLAR TRACTOR PLACING STREET LIGHTING CABLE UNDER BRICK PAVEMENT IN ST. LOUIS

Where it was necessary to cross the street, holes were dug at either side, and an auger with extension handle was used to bore a hole under the pavement. Thus the old system of hand trenching, with its labor cost, damage to the pavement, and delay to traffic, was completely done away with.

The cable consisted of copper electric wire covered with rubber insulation, which in turn was protected by a winding of hard steel tape. The outside was covered with asphaltum.

Water-Meter Problems

By Harry Barth

Associate Professor of Government, University of Oklahoma

IT is now generally accepted that a municipality should meter the water it sells. Though most practiced in the sections of the country where water is scarce, a constantly increasing number of cities are measuring the water they sell to consumers and charging for it in accordance with the amount sold. The view is held that water is a commodity, and the rules governing the sales of other commodities should govern this one also. In addition, it is believed that metering water tends to eliminate waste. Certainly, the installation of meters causes an immediate decrease in the amount of water used. If this means a decrease in the amount used rather than the elimination of water previously wasted, its social value is questionable. The chances are that habits of cleanliness, previously established, continue, and that the percentage saved results from stopping leaks and saving on the water used in irrigating lawns.

With the adoption of meters on a large scale, many questions come up in regard to the practice of installation and the control after they are installed. It is with problems of this general character that this summary deals.

Who Should Pay for Meters and Installation?

In the first place, who should pay for the meters, and who should pay the cost of installation? It rests either with the property owner or with the city. The practice at the present time varies considerably. In the second column of the tabular statement of information regarding water service appear the installation fees of a number of representative cities. There are a number of practices current. One is to fix a uniform installation fee. This is usually fixed at a point to cover the average cost, though in many cases it falls below. Bixby, Okla., for example, charges $15. This approximates the average for a residence, assuming that a standard meter costing about $10 is installed. Some communities, on the other hand, charge an amount considerably below the actual cost. This is especially true of the smaller towns of Oklahoma. Another method is to grade the fee in accordance with the actual cost of the meter and service. Lorain, Ohio, is typical of this group. The actual costs are paid by the property owner in Altoona, Pa., and Lincoln, Nebr. These costs include the cost of the meter, of making the tap, and of all labor and material incidental to bringing the water into the house. In some communities an additional charge is made when the pavement must be broken. Detroit, Mich., for example, charges $20 extra for breaking the pavement. This charge, however, is increased if the break is made during the first year. In some cases the owner puts in the service, while the city furnishes and sets the meter free of charge. The practice in Flint, Mich., is approximately the same. In some communities no charge is made except for fire service. Providence, R. I., is in this category, as is New Orleans, La. Battle Creek, Mich., rents the meter at a cost of from ten to twelve cents a month, though the meter may be purchased at cost by the property owner. On the other hand, Pittsburgh, Pa., Manchester, N. H., Waterloo, Iowa, Elmira, N. Y., and Gloucester, Mass., charge nothing for connection or meter. This general reivew of the practices indicates the divergence of the methods employed.

Which of them represents the best practice? Two factors should be kept in mind. In the first place, it should be remembered that the use of water has a definite social value. Society receives a distinct benefit from the abundant use of water for household purposes. Certainly, in buildings used for residence purposes, the installation should be made as cheaply as possible. The same consideration should not apply to a building used for industrial purposes. In the second place, the tearing of paved streets should be recognized as distinctly bad practice. Any obstacles which may be placed against cutting a paved surface, should be regarded as socially desirable. The practice suggested here is that industrial establishments should be expected to pay the total cost of making the connection with the main and carrying the water into the establishment. For connections with residences, it is suggested that the city carry the water to the curb line, but that the property owner be expected to carry the water into the apartments. This may seem to be an arbitrary method of handling the situation, and yet here is no standard by which to be guided. As in the field of taxation, a compromise has to be made. The determination of the extent to which society should go in assisting the individual, where

DATA ON FEES FOR METERS, SERVICES AND TESTING METERS

	Deposit Required for Meters	*Payment for Installing Service*	*Fee for Testing Meters*
Alexandria, Va	Amount of bill for one month. Flat rate one quarter advance	Service paid for by application at cost plus 10%	$2 to $15 if correct
Altoona, Pa	None	All costs paid by property owner, including meter	$1.50
Ames, Ia	None	50 cents for setting meter; property owner pays plumber for all services from main to house	$1 if correct
Ashland, Ky	$3	$15 for tap, which is refunded to property owner at rate of 20c per 1,000 gal. water passing through meter	$1 if correct
Augusta, Me	None	Tapping $20 to $50, including meter; renewal service without meter at $12 to $22	$1.50 to $50
Aurora, Ill	None	Meter purchased by property owner and installed free by city	None
Baltimore, Md	None	Standard service at $12 to $18 plus $2 to $6 per sq. yd. for paving services over 1" on time and material basis	$2 to $10 if correct
Battle Creek, Mich	None	$16 on cost of pipe; total cost if over 1" $30 for standard service outside city limits; meter rented 10c–12c month; sold at cost	None
Billings, Mont	2 times bill from tenants, with a minimum of $5	Cost of service paid by property owner	None
Bixby, Okla	$5	$15	None
Blackwell, Okla	$3, residence; $5, business	None	None
Boston, Mass	None	¾" service to $55; all others at cost	Actual expense if correct. $3 deposit
Brockton, Mass	None	Property owner pays cost of material and labor used on his property	$2 when at request of property owner
Burlington, Vt	None, except advance payment of sum equal to one family faucet	City puts in tap and lays line to street line, also puts in box; meter furnished for cost of setting	None
Canton, Ohio	None	$12 to $47 up to 2", then full cost	None
Canton, Okla	$5	$15	None
Casper, Wyo	None	All expenses paid by property owner, including cost of meter, which is installed by city free	None
Cedar Rapids, Ia	$3	None, $1 for reconnection each time meter is removed	50c if correct
Charleston, S. C	Deposits from tenants	Cost of service from main to property line plus 10%	$1 if correct
Clarksburg, W. Va	None	None. $21 for tap	None
Cleveland, Ohio	6 months' bill in advance	$25 to $210 on unpaved streets; $45 to $230 on paved streets	$1 to $10 if correct
Cleveland, Okla	$25, large meter; $15 small meter	$10	None
Columbia, S. C	None	$20 to $70, including running service to property line	None
Columbus, Ga	Bills in advance	None, except for large fire service connections paid for at cost by consumer	None
Comanche, Okla	$5	$4.50	None
Concord, N. H	None	None	None
Council Bluffs, Ia	$3 to $5 for residence; trifle over monthly bill for business	Meter free; plumber sets all pipes	None
Covington, Ky	Bill in advance for quarter if outside city limits	All service at expense of owner; meter furnished and installed free	None
Cumberland, Md	None	$15 cost of meter	$2 if correct
Cushing, Okla	$5, residence; $10 to $25, business	None	$1 if meter is correct
Dallas, Tex	None	$11.60 to $25 on unpaved streets; $21.20 to $28 on pavement; breaking pavement, $10 to $35 extra	50c and $1 if correct
Daytona, Fla	$5 to $30	$17 to $28	None
Detroit, Mich	None	No charge for meter; $40 to $240 according to size and distance of service; $20 extra for breaking pavement; extra equipment at cost plus 20%; $35 extra to cut 1st year, and $20 extra to cut 2nd year pavement	None
Douglas, Ariz	None inside city limits; $4 outside	Cost of service paid by property owner	$1 if correct
Duluth, Minn	2 months' bill from tenants	None	50c if correct
Eastland, Tex	$5	$1 to install meter	None
Elkhart, Ind	None	50c installation; 50c for transfer	None
Elmira, N. Y	$5 to $100 from tenants	None	$1 if correct
Eugene, Ore	$5 tenants	None, $2.75 to $4.25 for tap	Property owner pays for time if correct
Evansville, Ind	Depends upon nature of premises supplied	Meter free, but set at expense of consumer with annual service charge of $3 to $40 payable semi-annually in advance; consumer makes all service connections; fire service at cost plus 5%	None
Fairview, Okla	$7	$10	None
Flint, Mich	$5	Property owner pays cost of line from main to meter with no meter charge	$1 if correct
Florence, S. C	$3	$15	None
Fremont, Ohio	None	$20 on paved streets; $15 on unpaved streets	None
Geary, Okla	None	Consumer furnishes meter-box and city installs it free	None
Gloucester, Mass	None	None	None
Grand Island, Nebr	$6	$37 to $82	None
Great Falls, Mont	None	None	None
Guthrie, Okla	None	None	None
Harrisburg, Pa	None	$10.50 meter deposit, same to be installed by plumbers at owner's expense	None
Hastings, Nebr	None	Plumber installs all service at expense of owner	None

	Deposit Required for Meters	*Payment for Installing Service*	*Fee for Testing Meters*
Hibbing, Minn.	$5 from tenants	$20 for tap	None
Hinton, Okla.	None	$10.50 and 25c a month	None
Holyoke, Mass.	$10	Stock and time plus 10% meter rental at $2 to $50	None
Hominy, Okla.	$12, domestic; upward, business	None	None
Jackson, Miss.	Tenants $2	$15 and $20 to tap main and run to curb, with meter furnished free	None
Kenosha, Wis.	None	$20 from main to curb	$1
Knoxville, Tenn.	None	$25 for standard service to property line; extra size at cost plus 15%	$2 to $20
Lincoln, Nebr.	None	Property owner pays all cost including meter.	None
Long Beach, Calif.	$2.50, domestic; $5, business; $100 oil companies	$15 to $245 on unpaved streets, $30 to $260 on pavement; for oversize service where ¾" would do, $31 to $91 on unpaved streets and $46 to $126 on pavement; fire line $170	$1 to $5 if correct
Lorain, Ohio	None	$28 to $75, according to size of lead, plus costs of relaying pavement; $5 less in alley; $2 for basement meter; $10 for box meter	$1 if correct
Madill, Okla.	$5	$15	$1 if correct
Manchester, N. H.	None	None	None
Marshalltown, Ia.	None	$1 to cover inspection of job and installation; plumber installs service at expense of property owner, including meter	None
Maysville, Okla.	None	Tapping new main, $10; tapping old main, $15	None
Milwaukee, Wis.	None	$7 and $8.50 for new tap, and $1 for reconnection.	None
Minco, Okla.	To equal 1½ times monthly bill, with minimum of $5	$10	None
Moline, Ill.	May require payment of bill in advance	Meter furnished and installed by water department, and owner provides other service	$1 to $5 if correct
Monroe, La.	$3.50, residence; $5, business.		None
Monroe, Mich.	None	$1 per foot to curb plus ditching; meter bought by property owner and installed by plumber	$1.50 if correct
Muskogee, Okla.	$4.50 from tenants	None	$1.00 deposit
Newkirk, Okla.	$6.25	Consumer pays plumber to install	None
New York, N. Y.	None	Service pipes and meters furnished and installed by consumer; water department furnishes and installs all taps at $34.50 to $972.50	None
New Orleans, La.	None except for tenants	None except for fire service	None
Oneida, N. Y.	None	Consumer pays entire cost	None
Orlando, Fla.	$5	$9 to $21	$1 if correct
Oshkosh, Wis.	$5, residence occupied by tenants, and $10 from business tenants	$7 for stop box and connections, plus 55c per foot for pipe to curb	None
Paducah, Ky.	$3 to $100, according to size of meter	None, except for fire service, for which consumer pays cost plus 10%	$2 if correct
Pasadena, Calif.	None	$15 to $45; meter free; large service at cost	$1 if correct
Pauls Valley, Okla.	$3	None	None
Pawhuska, Okla.	1½ times bill	$32.50 upward	None
Perry, Okla.	$5, residence; $5 to $25 business	$10	$1
Philadelphia, Pa.	None	$2 per lineal foot for water connection, consumer paying total bill and buying meter	None
Phoenix, Ariz.	$1.50 to $2.50, according to size	$7 to $35 for tap paid for by consumer with meter extra	None
Pittsburgh, Pa.	None	None	None
Ponca City, Okla.	$5 residence; up to $100 business		50c if correct
Portland, Me.	None except from doubtful customers	Free from main to street line; owner pays balance and also buys meter if city thinks it not best to furnish same	None
Providence, R. I.	None	None, except for fire service, for which consumer pays cost	$2 where request seems unreasonable
Rochester, Minn.	None	Plumber installs line and meter at expense of owner; $2.25 to $3 for tap	None
Rutland, Vt.	None	$1.50	None
St. Joseph, Mo.	2½ times average monthly bill.	Meters furnished and set free	$2 if correct
St. Louis, Mo.	Bill in advance	Owner puts in service, and city furnishes and sets meter free	$5 to $25
Sallisaw, Okla.	$5	None	None
Shenandoah, Pa.	None	None; charge made for time and material; meter is property of water department	None, charge for time and material
Shreveport, La.	$4 residence to $100 for large consumers	None	$2 if correct
Sioux Falls, S. Dak.	$2.25 from tenants	Cost of service to curb	$1 if privately owned
Staunton, Va.	None	$1 for installing meter	None
Stillwater, Okla.	None	Meter-box owned by consumer, but city does all tapping and installing up to service line and puts in box and cover at cost	None
Tacoma, Wash.	None	$16 to $20, plus 25c and 35c per foot over 20 ft. on unpaved streets, $36 to $40 on pavement, plus $1 and $1.05 per foot over 20 ft.; $5 to cut sidewalk; removing and reinstalling meters $2 to $20; new meters furnished and installed free up to 1"; meters larger than 1" at cost	$1 to $60 if correct
Tampa, Fla.	$5 or signed guarantee by owner	General flat rate of $20, meter becoming property of consumer	$2 if correct
Temple, Tex.	None	$7 and $8.50 for new tap; $1 for reconnection.	None
Trinidad, Colo.	None where metered; flat rate 6 months in advance	At expense of consumer, including cost of meter	None
Tucson, Ariz.	None	$20 to $85 deposit, credited to water account.	None
Twin Falls, Ida.	$1	$11 for tap	$1.50 if correct

	Deposit Required for Meters	*Payment for Installing Service*	*Fee for Testing Meters*
Vicksburg, Miss.	Not less than 2 months' bill, with a minimum of $3	$11 to $16 for standard size; large size at cost plus 15%; cutting and closing pavement at cost plus 15%	$1 if correct
Waltham, Mass.	None	Installed by city at cost, property owner paying cost from street	None
Waterbury, Conn.	None	None	None
Waterloo, Ia.	None, except $3 from tenants	None	$1 if correct
Waynoka, Okla.	$8	$1	$1 if correct
Weleetka, Okla.	$5	$10	None
Wetumka, Okla.	$5	$12.50	None
Wilmington, Del.	None, except fire service	None, except fire service	Cost of testing if correct
Wilmington, N. C.	None	$2.50 to set meter; no charge for meter; consumer pays service cost from main	$2 if correct; 50c on new meters
Wynona, Okla.	None		None
Yale, Okla.	$8	$12	$1

society has a distinct interest in the individual's welfare, must always be compromised. A compromise cannot avoid being to some extent arbitrary. As indicated above, breaks in the pavement should be penalized by exacting a sum above the cost, to vary in accordance with the age of the pavement.

Should City Employees or Plumbers Make Connections?

On one point there can be little room for divergence of opinion. That is upon whether the city should make the connections through its own employees or whether plumbers hired by the property owners should do this work. The experience of several Oklahoma cities, for example, indicates that the city should not trust plumbers, employed by the property owners, to make the connections from the main to the curb. The possibility of sloppy work, where the consequences would be large in the sum of water wasted through leaks, should dictate that the city do the work to the curb line at least. Certainly, the city should always install the water-meter. In this way it will be sure that the meter is not tampered with before installation.

Ownership or Deposit by Consumer

There are two alternatives so far as the meter is concerned. The city may ask the property owner to buy the meter outright, or else the city may own the meter and require the owner to pay a deposit covering its cost. Of course, there is the possibility of the city's paying the cost of the meter outright. The practice suggested here is that the city own the meter, but exact a deposit covering the cost. This is suggested for several reasons. The meter is really part of the equipment of a firm supplying water. It is only fair that the costs of the meters be charged either to the equipment account of the concern or to its maintenance account. Gas companies, for example, generally pay the cost of the gas-meter. The rates will then have to be adjusted to meet this additional outlay of expense. Another factor enters, and this is that the life of a meter-box is distinctly limited in districts where the water has a high alkali content. In such places the chances are that the meter will go dead after a five-year period. After this time, its cogs will have become corroded to a point where it will not record with accuracy. It would be a considerable burden on the property owner to expect him to buy a new meter whenever his meter went dead. By paying for the meter out of rates, the cost is spread over a period of years and is equalized for the consumers. Where the meter is above the size necessary for domestic purposes, there seems no good reason for not making the consumer pay the cost of installation and maintenance.

A deposit covering the cost of the meter should be required of the property owner. This deposit serves two purposes. It will indemnify the city in case the property owner removes the meter upon the sale of his property. In addition, the deposit will serve to guarantee that the water bills are paid, and will eliminate bad debts entirely. A $10 water deposit will cover, ordinarily, three or four months' delinquent bills.

The deposits required in a group of American cities, appear in column one of the tabular summary of information regarding water service. There is no uniformity in the deposits which are required. In some cases it is a flat sum. In other cases, it is the average bill for a number of months. In other cases, it is a bill in advance for a stipulated period. This method is readily used only where water is sold on a room basis and not metered. In many cases no deposit is required, though in some cases a deposit is assessed against tenants, as in New Orleans, or against doubtful customers, as in Portland, Maine.

Testing Meters

The third column of the tabular statement indicates the fee required for testing meters in the same cities. It is almost invariably true that water-meters never register too great an amount. If they err at all, it is on the side of the customer. Meters usually leave the

factory gaged to register 5 per cent too high. It is assumed, though, that this discrepancy will rapidly be eliminated, and it will then operate increasingly in favor of the customer. Meters are complicated machines. The mechanism becomes clogged by impurities in the water or corroded by the chemicals. Imperceptibly the amount registered lessens. Of course, the degree to which this occurs depends upon the type of meter employed and upon the water.

When the cantankerous customer enters, shouting that he is being robbed by a meter, the clerk can be fairly certain that the customer is mistaken. There is a certain type of citizen for which the world is tinged with blue, and for whom a city is a peculiarly irritating institution. He feels that it is one of his rights as a citizen to inveigh against the corrupt city administration. The following practice is suggested to handle this pest. Inform him that you are glad to test his meter, and that if a mistake has been made it will be corrected. Assure him that his bill will be reduced to the exact degree to which the meter has recorded too rapidly. Point out to him, on the other hand, that it is only fair that any excess be charged to him. Assure him that you will revise his bill upwards in case he has been receiving more water than he has been paying for. He will hesitate at this, and in nine cases out of ten, in certain Oklahoma cities, he goes home and holds his peace. In the tenth case, send a man to bring in the meter, but insist upon the customer's being present when the test is made. This will be done on the grounds that you want him to be sure that he is fairly treated. Actually, this will help deter him from complaining in the future, as it will consume his time and will be disagreeable. The test is easily made, as it consists merely in connecting up the meter between a flow pipe and a 40-gallon tank and turning on the water.

The practice among the cities listed in the tabular statement is to charge a nominal sum for testing. In case the meter is correct, a sum of about $1 is usual. One dollar, however, does not cover the cost of the test. Sending a man to bring in a meter in an outlying section may be a job of several hours' duration. The cost of the work should be assessed in case the meter is correct. Of course, in all cases the bill should be adjusted either upward or downward to meet the result of the test.

A profitable method of increasing revenue is for the city to test the meters on its own account frequently. Time is usually on the side of the customer, though it will vary in accordance with the type of the water. An annual test would probably prove profitable. The time it takes for a meter to get out of order can be obtained by experiments in each individual community. Dead meters should certainly be removed from the services as quickly as they are discovered.

Monthly Meter Readings

Another valuable practice is to read the meters monthly. Every reading constitutes a test of the meter. The reader can tell whether the meter is functioning properly, because the average consumed will not vary greatly from month to month. In addition, he can tell by looking at the dial whether an attempt has been made to tamper with the meter. Monthly readings usually are found to pay for themselves.

The Dishonest Consumer

It is not only inaccurate meters which must be contended with. There is, in addition, the dishonest consumer. There are two general methods of stealing water, though others are on record. The most usual is the by-pass. A connection is made around the meter, and the consumer runs only enough water through the meter to forestall suspicion. The only way to catch a by-pass is by comparing the amount used with the amount used by consumers with similar requirements. The other customary method of getting water without paying for it is to break the dial glass and either to break off the hands or to adjust the disks. This is readily discovered. When asked about the affair, the consumer invariably replies that it was probably children playing in the neighborhood who opened the meter-box and did the damage. The meter-box should be placed between the curb and the sidewalk below freezing level. It is not advisable to place it elsewhere in a cold climate. There will always be a certain number of meters damaged in the course of a year. Where this occurs frequently, the chances are that the consumer is doing the damage, knowing that if his meter does not record he will be required to pay only the minimum charge for the month. In such cases the city will be driven to placing a padlock on the meter-box or sealing it in some other way.

Other methods are used on certain occasions. One large factory in Vinita, Okla., discovered that by forcing hot water back into the main the rubber disks in the meter could be put out of order, with the result that the meter no longer registered. This proved to be a monthly occurrence, and the city officials

despaired of ever getting a meter which would register the water consumed. Then the happy idea was hit upon of putting a check-valve into the connection. After that the meter registered with no further trouble. This type of thievery is possible only where the consumer has sufficient equipment to send the stream of hot water into the main. Of course, it will be met with rarely.

The author wishes to acknowledge the advice graciously given by F. S. E. Amos, formerly City Clerk of Vinita, now of the Government Department of the University of Oklahoma.

MINIMUM RATES AND SERVICE CHARGES FOR WATER-METERS

A series of tables compiled from the wealth of reports received by THE AMERICAN CITY on water-meters have been prepared for publication in the June issue covering minimum rates and service charges for water-meters in about 200 representative cities throughout the country.

Stale Bleach Ineffective as a Sterilizing Agent

CHLORINATED lime, also known as bleaching powder and sometimes called chloride of lime, a substance used extensively as a germicide, deodorant, and bleaching agent, loses its strength with age, eventually becoming ineffective as a germicide. An investigation has been made by the United States Department of Agriculture to determine the rate of deterioration of chlorinated lime, and the results of the study have been published in Department Bulletin 1389, "Deterioration of Commercially Packed Chlorinated Lime," copies of which may be secured free from the U. S. Dept. of Agriculture, Washington, D. C.

The use of seriously deteriorated chlorinated lime for germicidal purposes not only is a waste of money, but, by affording a false security, causes other precautions to be omitted, and serious injury to health may result. The investigation disclosed no marked difference in the rate of deterioration between samples manufactured and packed in winter and those put up in summer. There was, however, a seasonal variation, the loss of available chlorine; that is, the effective chlorine, being greater in warm than in cold weather. This loss is slightly accelerated by light.

The results on the rate of deterioration as influenced by the method of packing, whether by hand or machine, did not lead to any definite conclusions, and the keeping qualities of the bleaching powder were not greatly affected by the type and size of commercial container. The average loss of available chlorine for all samples from the different sources packed and stored in various ways, was 1.08 per cent a month for a period of 12 to 15 months. Most of the available chlorine loss was transformed into chloride chlorine, the loss in total chlorine in most cases and the change in chlorate chlorine being very slight.

Past and Present Snow-Removal Equipment Meet at the Crossroads

The above photograph, which we are able to publish through the courtesy of J. W. Hannen, Editor, Michigan Roads and Pavements, shows the meeting of two great rotary snow-plows, one of which was going north and the other south, meeting in the village of Kalkaska in the northern part of Michigan. Up to this year this road was kept open only in part by the use of ox teams, one of which is shown in the picture. The State Highway Department of Michigan has, this last winter, for the first time in history, kept its four main trunk lines running north and south open to traffic from the Indiana state line to the Straits of Mackinac

Getting at the Facts of Public Accidents

By Sidney J. Williams

Director, Public Safety Division, National Safety Council, Chicago, Ill.

IT is a habit among students of the accident problem, especially the traffic-accident problem, to lament the absence of reliable detailed information as to the number and severity of accidents of different kinds, their causes, and the kinds of persons involved in them. After taking part in these lamentations for some time, the National Safety Council's Statistical Committee (Dr. Louis I. Dublin, Chairman) and its headquarters staff set out a year ago to get this information by the Grover Cleveland method of getting it.

A monthly report form (reproduced in Figs. 1 and 2) was sent to every police department in cities exceeding 25,000 population, with the urgent request that this report be filled out as far as possible for the month of January, 1925, and each succeeding month, and with the promise that a summary of the reports thus received would be sent back to each police department soon after the close of the month. This report form had been very carefully formulated by the Statistical Committee, the membership of which is well-balanced, including representative state and city officials and local safety council managers, familiar with the practical difficulties of local departments, as well as expert statisticians. The Committee's purpose was to include on the form those essential elements of greatest value in accident-prevention work, without making the form too burdensome or terrifying. It will be noted that in "Table A," the most important part of the form, the automobile accidents are subdivided because they are the largest group; the other most frequent kinds of public and home accidents are included; the total of industrial accidents is likewise included, simply to make up the grand total for the community, as it is recognized that detailed information on industrial accidents is better obtained from the state and national governments and insurance companies.

The police departments and local safety organizations were told that if their reporting system was such as to yield the information called for on this monthly form, the system might be considered adequate; if not, they might consider adopting a more adequate system—in fact, they might adopt the 4- x 6-inch card form (Fig. 3) for reporting and recording individual accidents, which likewise had been developed by the same committee and which corresponded to the monthly form in every detail. The Council offered to furnish 100 of these cards free for trial, as well as a year's supply of the monthly forms (including copies for the local file), and also a supply of a larger tally sheet to be used in summing up the month's experience, in departments where a punch card tabulating machine was not available.

For the first month, January, reports were received from 68 cities totaling 25,000,000 population, including New York and Chicago and nearly all of the cities having local safety organizations. Some of these cities reported simply the total of automobile fatalities; only a part of them reported non-fatal injuries, other public and home accidents and industrial accidents; and very few indeed gave a satisfactory report on "Table C," which covers the circumstances of the accident—what the driver and the pedestrian were doing, the condition of the vehicle, the weather, the light, and the roadway. They did not report these details because they did not know them.

For December, 1925, reports were received from 91 cities and the whole of New York State, the latter from the State Motor Vehicle Department, whose splendid statistical work is well known; the total population covered exceeded 32,000,000. More than half of the accidents reported were classified by age and type. More than 40 of these cities, as well as the New York State Bureau, are now using a reporting system based on the recommended card, although not all of them are yet able to secure complete information on the circumstances of the accident.

Each month a mimeographed summary of the reported experience is sent back to every police department, including those which report and those which do not. This shows each city how it stands in comparison with others of its class, and acts as a constant stimulus to improvement.

What is the real purpose and the real result of this undertaking? First and greatest, the more adequate reporting and analysis of the accident experience of each community, to furnish a sound basis for preventive work in that community. To this end, the statistical tabulations must of course be supplemented by

ACCIDENT REPORT, Month of ..... 192..... ,City of .....

TABLE A—GENERAL SUMMARY BY TYPE AND AGE

TYPE OF ACCIDENT	Number of Persons Killed					Number of Persons Injured					Number Automobile Accidents — Property Damage Only
	All ages	0-4	5-14	15-54	55 and over	All ages	0-4	5-14	15-54	55 and over	
GRAND TOTAL											
PUBLIC ACCIDENTS—TOTAL											
Motor Vehicle—Total											
Motor vehicle with pedestrain											
Motor vehicle with motor vehicle											
Motor vehicle with railroad train											
Motor vehicle with street car											
Motor vehicle with bicycle											
Motor vehicle with horse vehicle											
Motor vehicle with other vehicle											
Motor vehicle with fixed object											
Non-collision accident											
Railroad—not with motor vehicle											
Street car—not with motor vehicle											
Other vehicle—not with motor vehicle											
Other street accidents											
Buildings and structures											
Drowning											
Fire Arms											
Other public accidents											
HOME ACCIDENTS—TOTAL											
Falls											
Burns and scalds											
Asphyxiation and suffocation											
Fires and explosions											
Electricity											
Poisons											
Fire Arms											
Other Home Accidents											
INDUSTRIAL ACCIDENTS—TOTAL											

TABLE B—TYPE OF MOTOR VEHICLE INVOLVED IN ACCIDENT

	Number of Cases Involving Personal Injury		
	Total	Resulting Fatally	Non-Fatal
Total number of accidents reported			
Private passenger car			
Truck or commercial			
Taxicab			
Jitney			
Bus			
Motorcycle			

MOTOR VEHICLE FATALITIES—RECONCILIATION OF POLICE AND HEALTH DEPARTMENT RECORDS

1. Deaths resulting from Motor Vehicle accidents in the city as reported above (Police Records) .....
2. Add—Deaths occurring in city due to accidents outside the city .....
3. TOTAL .....
4. Subtract—Deaths occurring elsewhere due to accidents in city .....
5. Result—Deaths occurring in city from Motor Vehicle accidents anywhere (Health Dept. or U. S. Census Bureau basis) .....

(OVER)

FIG. 1.—FACE OF MONTHLY REPORT FORM

TABLE C—CIRCUMSTANCES ATTENDING OCCURRENCE OF AUTOMOBILE ACCIDENTS

1. THE DRIVER	No. of Motorists		
	Total	Resulting Fatally	Non-Fatal
Exceeding speed limit			
On wrong side of road			
Did not have right of way			
Cutting in			
Skidding			
Passing standing street car			
Passing on curve or hill			
Passing on wrong side			
Failed to signal			
Backing			
Cutting left corner			
Car ran away—no driver			
Thru street—failed to stop			
Drove off roadway			
Drove through safety zone			
2. CONDITION OF DRIVER			
Had physical defect			
Was intoxicated			
3. SEX OF DRIVER			
Male			
Female			
4. CONDITION OF VEHICLE	No. of Vehicles		
Brakes defective			
Steering mechanism defective			
Other defect in equipment			
Glaring headlights			
One or both headlights out			
Headlights dim			
Tail-light out or obscured			
No chains (on wet and slippery road)			
5. THE PEDESTRIAN	No. of Pedestrians		
Waiting for, or getting on or off street car on safety zone			
—Same—no safety zone			
Getting on or off other vehicle			
Crossing at intersection with signal			
—Same—against signal			
—Same—no signal			
Standing on safety isle			
In street, not at intersection; Adult			
Same—Child under 15			
At work in roadway			
Riding or hitching on vehicle			
Not on roadway			
Not known			

6. CONDITION OF PEDESTRIAN	No. of Pedestrians		
	Total	Resulting Fatally	Non-Fatal
Was intoxicated			
Had physical defect			
Was confused by traffic			
View obstructed			
7. SEX OF PEDESTRIAN			
Male			
Female			
8. ROAD CONDITION	No. of Accidents		
Defect in roadway			
Road under repair			
Obstruction not lighted			
Dry surface			
Wet surface			
Muddy surface			
Snowy surface			
Icy surface			
9. WEATHER CONDITION			
Clear			
Cloudy			
Fog			
Rain			
Snow			
10. LIGHT CONDITION			
Daylight			
Dusk			
Artificial light—good			
Artificial light—poor			
Darkness			
11. RAILROAD CROSSING			
Gates not down			
Guarded crossing			
Unguarded crossing			
Car ran thru gates			
Driver disregarded signal			
Watchman not on duty			
Signal not given			
12. LOCATION			
Railroad crossing			
On bridges			
At intersection			
Between intersections			

(OVER)

FIG. 2.—REVERSE SIDE OF MONTHLY REPORT FORM

Vehicular Accident Report

CITY OF .....

Date..... 192.... At..... A. M. / P. M.
Date and time of accident

On..... At.....
Street *Intersecting street or house number*

Vehicle 1

A..... Reg. No..... Owned by.....
Make and type of vehicle

Driven by..... Of.....

Operator's License No..... Age..... Sex..... Driving Experience..... Direction of travel.....

Did Accident Involve (Pedestrian ☐ Railroad train ☐ Horse-drawn vehicle ☐ Fixed object ☐
(Check X which)) Automobile ☐ Street car ☐ Other vehicle ☐ Non-Collision ☐
(If another vehicle was involved, give information concerning vehicle 2) *(Describe under remarks)*

Vehicle 2

A..... Reg. No..... Owned by.....
Make and type of vehicle

Driven by..... Of.....

Operator's License No..... Age..... Sex..... Driving Experience..... Direction of travel.....

Names of persons injured	Age	Sex	Killed or Injured	Pass. or Pedestrian	Address
1.		Male ☐ Female ☐	Killed ☐ Injured ☐	Pass. ☐ Ped. ☐	
2.		Male ☐ Female ☐	Killed ☐ Injured ☐	Pass. ☐ Ped. ☐	
3.		Male ☐ Female ☐	Killed ☐ Injured ☐	Pass. ☐ Ped. ☐	

The Injured were taken where?.....

Remarks: .....

What property was damaged?..... Estimated Property Damage $.....

National Safety Council—1926 (OVER)

WHAT WAS DRIVER DOING? (Check items X)	Vehicle 1	Vehicle 2
1. Exceeding speed limit		
2. On wrong side of road		
3. Did not have right of way		
4. Cutting in		
5. Skidding		
6. Passing standing street car		
7. Passing on curve or hill		
8. Passing on wrong side		
9. Failed to signal		
10. Backing		
11. Cutting left corner		
12. Car ran away—No Driver		
13. Thru street—Failed to stop		
14. Drove off roadway		
15. Drove thru safety zone		
16. Car parked or standing still		
CONDITION OF DRIVER		
1. Had physical defect		
2. Was intoxicated		
CONDITION OF VEHICLE		
1. Brakes defective		
2. Steering mechanism defective		
3. Other defects		
4. Glaring headlights		
5. One or both headlights out		
6. Headlights dim		
7. Taillight out or obscured		
8. No chains (wet & slippery road)		

WHAT WAS PEDESTRIAN DOING?	X
1. Waiting for, or getting on or off street car on safety zone	
2. Same—no safety zone	
3. Getting on or off other vehicle	
4. Crossing at intersection with signal	
5. Same—against signal	
6. Same—no signal	
7. Standing on safety isle	
8. In street, not at intersection; adult	
9. Same—child under 15	
10. At work in roadway	
11. Riding or hitching on vehicle	
12. Not on roadway	
13. Not known	
CONDITION OF PEDESTRIAN	
1. Was intoxicated	
2. Had physical defect	
3. Was confused by traffic	
4. View obstructed	

ROAD CONDITIONS	X
1. Defect in roadway	
2. Road under repair	
3. Obstruction not lighted	
4. Dry surface	
5. Wet surface	
6. Muddy surface	
7. Snowy surface	
8. Icy surface	
WEATHER CONDITIONS	
1. Clear	
2. Cloudy	
3. Fog or mist	
4. Rain	
5. Snow	
LIGHT CONDITIONS	
1. Daylight	
2. Dusk	
3. Artificial light—good	
4. Artificial light—poor	
5. Darkness	
RAILROAD CROSSING	
1. Gates not down	
2. Guarded crossing	
3. Unguarded crossing	
4. Car ran thru gates	
5. Driver disregarded signal	
6. Watchman not on duty	
7. Signal not given	

If arrest was made state:

Name of person arrested ..... Charge ..... Disposition .....

Names of Witnesses	Address	Age	Phone No.
1.			
2.			
3.			

Date of Report ..... Name of Officer ..... (OVER) ..... Rank ..... Shield No. .....

FIG. 3.—THE TWO SIDES OF THE INDIVIDUAL REPORT CARD

The monthly form and the individual report card were slightly revised as of January 1, 1926, on the basis of the 1925 experience. The revised forms are shown here

The items included on these report forms are in harmony with the recommendations of Secretary Hoover's National Conference on Street and Highway Safety

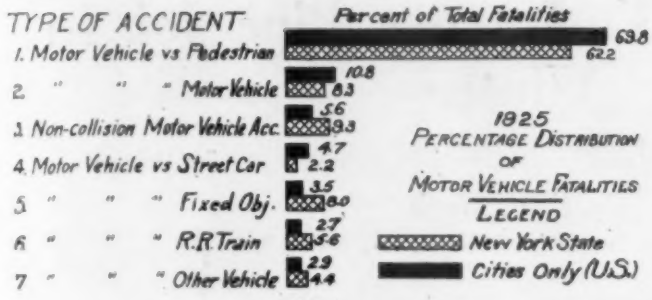

TYPE OF ACCIDENT
Percent of Total Fatalities
1. Motor Vehicle vs Pedestrian 63.8 62.2
2. " " " Motor Vehicle 10.8 8.3
3. Non-collision Motor Vehicle Acc. 5.6 9.3
4. Motor Vehicle vs Street Car 4.7 2.2
5. " " " Fixed Obj. 3.5 8.0
6. " " " R.R. Train 2.7 5.6
7. " " " Other Vehicle 2.9 4.4
1925
PERCENTAGE DISTRIBUTION OF MOTOR VEHICLE FATALITIES
LEGEND
New York State
Cities Only (U.S.)

FIG. 4

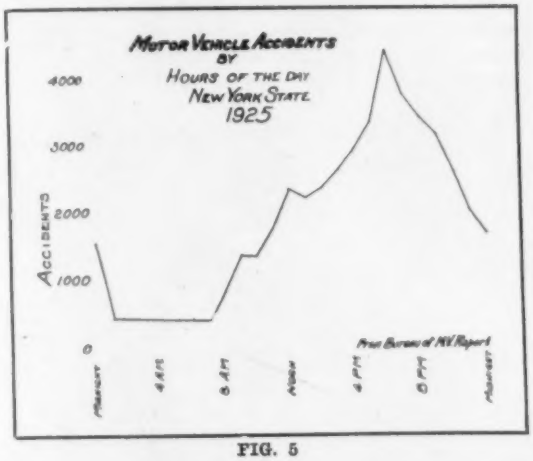


FIG. 5

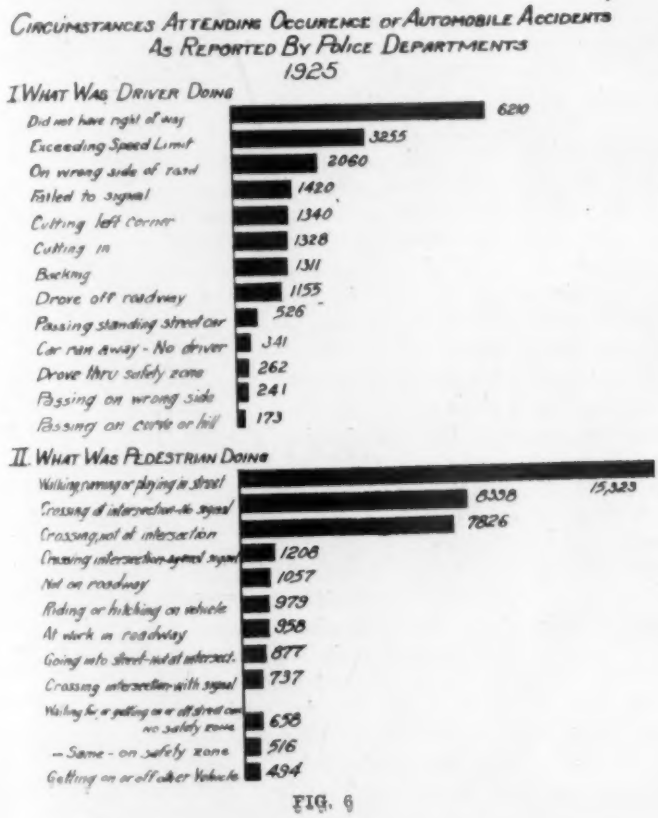

CIRCUMSTANCES ATTENDING OCCURENCE OF AUTOMOBILE ACCIDENTS AS REPORTED BY POLICE DEPARTMENTS 1925
I WHAT WAS DRIVER DOING
Did not have right of way 6210
Exceeding Speed Limit 3255
On wrong side of road 2060
Failed to signal 1420
Cutting left corner 1340
Cutting in 1328
Backing 1311
Drove off roadway 1155
Passing standing street car 526
Car ran away - No driver 341
Drove thru safety zone 262
Passing on wrong side 241
Passing on curve or hill 173
II. WHAT WAS PEDESTRIAN DOING
Walking, running or playing in street 15,323
Crossing at intersection-no signal 6398
Crossing, not at intersection 7826
Crossing intersection-against signal 1208
Not on roadway 1057
Riding or hitching on vehicle 979
At work in roadway 958
Going into street-not at intersect. 677
Crossing intersection with signal 737
Waiting for, or getting on or off street car-no safety zone 658
-- Same - on safety zone 516
Getting on or off other Vehicle 494

FIG. 6

spot maps and by intensive engineering studies of those locations where the accident frequency is highest. The other principal purpose and result is to build up a body of national statistics that will show the high spots of the problem; the percentage distribution in the various classifications; the trend from year to year.

The results for 1925 are nothing to brag about, in the matter of completeness, but they constitute a good start nationally, and they certainly reflect a great improvement locally in many communities. The chart reproduced in Fig. 4 shows the distribution, by percentages, of fatal and non-fatal automobile accidents as reported to the National Safety Council, according to type and age. In this chart there are shown, separately, the percentage distribution for New York State and for all the cities reporting, outside of New York State. As might be expected, the percentage of railroad collisions is higher and of street-car collisions lower in the state than in the cities.

Fig. 5 shows the distribution of motor-vehicle accidents by hours of the day, as reported by the New York Bureau of Motor Vehicles; and Fig. 6 shows the circumstances attending the occurrence of motor-vehicle accidents as reported in 1925 to the National Safety Council.

The National Safety Council is happy to furnish to a municipality of any size, or to any one else, a sample set of the recommended report forms, and, if any municipality wishes to try out the use of this set, will furnish without charge 100 of the report cards, and will thereafter furnish these at one cent each if desired; or the cards may be printed locally. The Council will also furnish without charge a sufficient supply of the monthly forms.

Remarkable Emergency Pipe Job in Winter

Steel Truss Bridge Carrying Pipe Replaced by Cable Suspension Bridge

By F. E. Beck

Chief Engineer, Consolidated Water Co., Utica, N. Y.

UTICA'S water-supply is obtained from two sources—the northern or Adirondack supply, and the southern supply, which is taken from several small streams. The northern supply comes from West Canada Creek and is taken from the stream at Hinckley, approximately twenty miles from Utica. The transmission main is of cast iron, 24 inches in diameter, and at a distance of approximately four miles below Hinckley it crosses the West Canada Creek on a steel truss bridge built for the purpose. The bridge is 134 feet long and the invert of the pipe 93 feet above the bottom of the creek. For several miles the creek runs through a deep gorge with vertical rock banks.

The bridge was built in 1905 and was designed to carry two lines of pipe, although the second line was never constructed. Since the construction of the pipe line it has been the custom to walk over the line at least twice each year and to make one inspection in the late fall, in order that any leaks may be repaired before the deep snows which we always have in this territory. The inspection in November showed no leaks.

A Venturi meter is installed at the upper end of the transmission main, and charts and readings are taken daily, so that if a break should occur between the regular inspections it would immediately be noticed and men would be sent out to locate and repair the trouble.

At the lower end of the transmission main we have two reservoirs, one of 105 million gallons capacity, and one of 15 million gallons capacity. The smaller reservoir is connected to our intermediate-service area, and owing to the small capacity of the reservoir it requires careful attention by the caretaker to so operate the influent valves that the reservoir may at all times be kept full.

On February 6 at noon the reservoir keeper phoned the office that the water was rapidly going down in the reservoir and that he was unable to keep it full. This looked like a break in the main below the reservoir, or in the distribution system, and our entire organization was immediately started out to look for leaks. At 7:30 P. M. we were notified that our pipe bridge below Hinckley had failed. This, of course, answered the question as to why the water was going down in the reservoirs. Steps were immediately taken to obtain more details, and on Sunday morning word was received that the bridge was a complete wreck at the bottom of the gorge.

This was indeed serious, as with the supply cut off for any length of time we could expect a water shortage in our intermediate service area, and perhaps low pressure in the higher parts of the low-service area.

In arriving at a decision as to the method of replacing the bridge, the following points were of the greatest importance: first, time; second, accessibility; and, third, the labor problem. The item of time has already been discussed as being of the greatest importance. The location of the bridge was about four miles from the railroad, and all materials must be hauled by team, as the roads were not open for automobiles. The snow was from two to four feet deep on the level, and many drifts in the roads were from ten to fifteen feet deep. About two miles of the distance was through fields and woods, which would necessitate the shoveling out of roads. The labor problem was not of such great importance, as tents or shacks could be erected and the men could be cared for on the job, if it was found impossible to obtain the necessary men from Hinckley or Prospect, two small villages near the work.

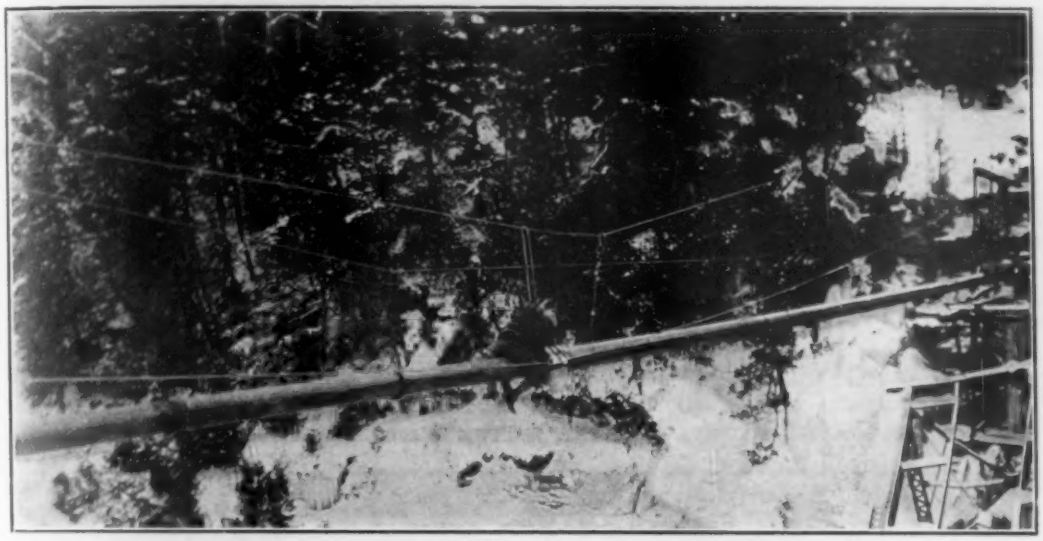
After considering the different types of structures which might be erected, it was decided to build a cable suspension bridge, and to place thereon a 24-inch wooden stave pipe. Before proceeding with the final design of the bridge, it was decided to be sure that all necessary materials were available and could be procured in time to meet our needs. Mr. Robertson, Assistant Engineer, was sent to Williamsport, Pa., and made arrangements with the Standard Wood Pipe Company, to manufacture the pipe at once. The writer left for New York, and after determining the size of cable required, was fortunate in finding

that the American Steel and Wire Company had the required sizes in stock. The main cables, 2 inches in diameter, as well as the drop cables, ⅝-inch in diameter, were ordered cut to exact length, and the necessary sockets and eyes attached thereto.

The next few days were spent in the design of the various parts of the bridge, and in rearranging our distributing system, so that we could retain as much water as possible in our higher reservoirs.

It was not until six days later, or February 12, that we visited the site of the bridge. At this time we were fortunate in finding local labor, consisting of woodsmen, lumberjacks, and guides, and a gang was set to work breaking roads and building a storehouse for tools and materials, which began to arrive the following day. At this time it was found that it would be impossible to complete the bridge in time to meet our requirements, and that some additional supply for the higher elevations must be had immediately.

Owing to the depth of the gorge, the width and depth of the stream, and the vertical rock banks, it was not deemed advisable to try to lay a pipe through the gorge for a temporary supply. It was decided, however, to run a 10-inch steel pipe across the gorge and support the pipe by means of a cable. Pipe and cable were shipped, and three days later the pipe was completed and connected to the ends of the 24-inch cast iron pipe, and the water turned on. The pipe held for about ten minutes, when it suddenly parted at one of the couplings. As the pipe parted at a point 60 feet from the top of the bank and 80 feet above the creek, it was a question as to whether repairs could be made, but owing to the emergency existing at this time, it was decided that a man could be sent out on the cable supporting the pipe, and that by means of light chain falls, the ends of the pipe could be brought together, a sleeve placed over the ends, and the joints run with Leadite. The repairs were made as outlined, and the pipe held until it was removed on March 13 to make room for the permanent 24-inch wood-stave pipe. During the construction and repair of the 10-inch steel pipe we were unable to make much progress with the construction of the permanent bridge, as the excavation for the concrete anchors for the main cables was solid rock, and the blasting would not only interfere with the work on the pipe but would also be liable to break the cable carrying the pipe. It was not until February 27 that we were able to start real work on the permanent structure, and on that day the concrete for the foundation of the North "A" frame was placed. The next eight days were required to excavate and construct the anchors for the main cables, to erect the "A" frames, and to get the main cables straightened out on the ground ready for pulling in place.



POURING LEADITE AT JOINT OF 10-INCH EMERGENCY STEEL MAIN

On Tuesday, March 9, the main cables were placed, and the next three days were required to place the clamps and hang the drop cables and floor beams. One and one-half days were required to place the temporary floor and saddles for the wooden pipe. The 10-inch steel pipe was removed just before placing the saddles. On Sunday forenoon, March 14, the pipe saddles were adjusted to give the desired

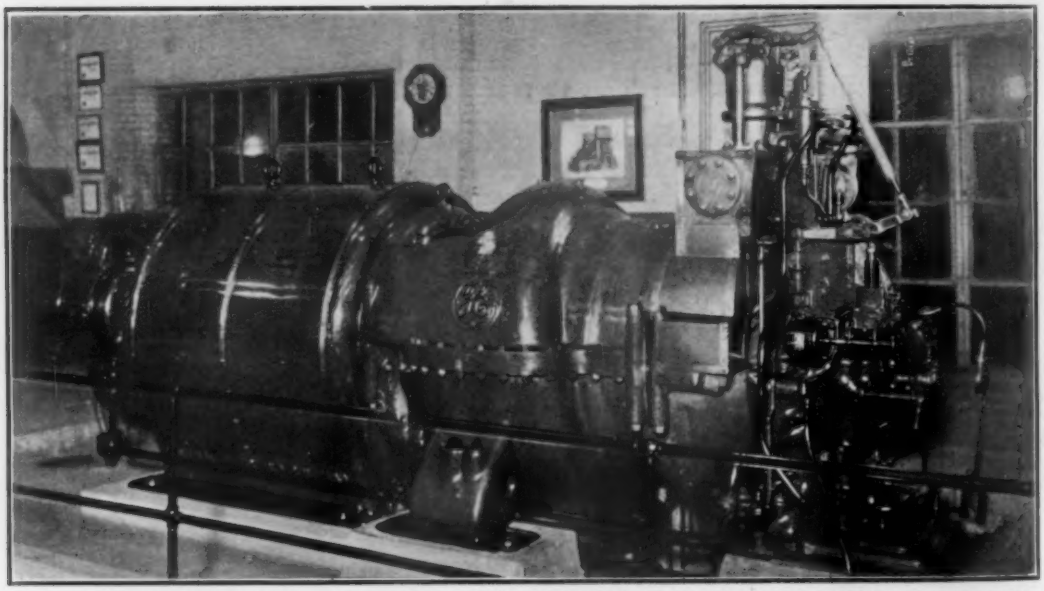
crown to the wooden pipe, and construction of the pipe was started at noon and completed in two days. After final adjustments were made, the water was turned on at 3:25 P. M. March 16.

The floor of the bridge is intended to remain in a level position and the pipe saddles are constructed so that the wooden pipe will have a 12-inch crown at the center of the span. During construction of the pipe the main cables were tightened so that the empty pipe would have a crown of 15 inches and after filling it would be allowed to settle to 12 inches, at which point it will be maintained.

ACKNOWLEDGMENT.—From a paper read before the New York Section, American Water Works Association.

A Well-managed Municipal Plant

EXTERIOR VIEW OF THE MUNICIPAL ELECTRIC LIGHT AND WATER PLANT, BELLEFONTAINE, OHIO



INTERIOR OF BELLEFONTAINE MUNICIPAL PLANT, SHOWING 750-KW., 3-PHASE, 60-CYCLE, 2,300-VOLT CONDENSING CURTIS TURBINE GENERATOR SET WITH DIRECT-CONNECTED EXCITER

For a statement of the savings effected in Bellefontaine, see article on page 409 in the April, 1926, issue of The American City

An Incinerator for Four Residential Communities

By Richard A. Bennett

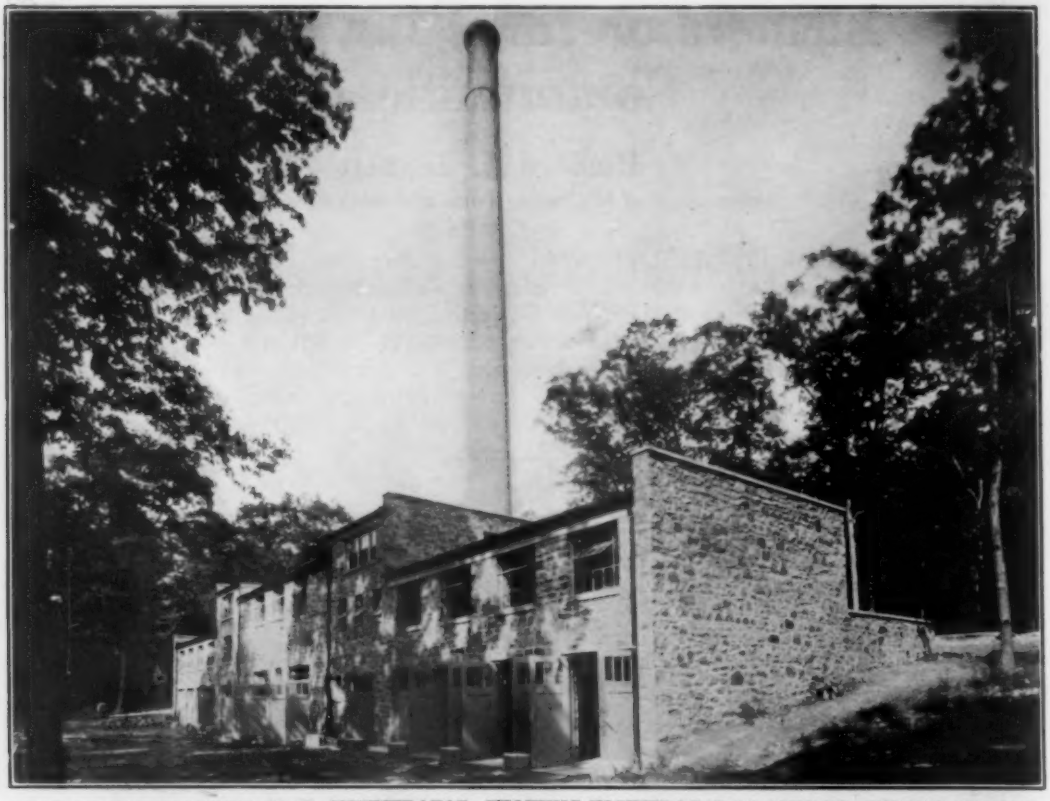
Superintendent of Highways, Town of Eastchester, N. Y.

WESTCHESTER COUNTY, which lies immediately to the north of New York City, is a high-class residence section with many villages and cities. The town of Eastchester is a subdivision of this county, and in this particular town are located the highly developed and restricted villages of Bronxville and Tuckahoe. Each of these villages had the refuse disposal problem to solve but none of them cared to build an individual incinerator, as they were not large enough to require individually a plant of a practical size.

After five years of thorough investigation, the town of Eastchester built the incineration plant illustrated herein, which was put into full operation in January, 1925. It was realized during the investigation that in order that an incinerator plant should not be objectionable to the public it should be of a type scientific in design and of a reputable make that had proved itself satisfactory by actual municipal installations.

From the investigation it was further realized that care in selecting a proper equipment is often of little avail if the exterior of the plant is not of an attractive design and the immediate surroundings made pleasing to the eye and kept in a neat, clean condition. The town has endeavored to make the incinerator a welcome neighbor, and the results have been very gratifying, as the town has yet to receive a complaint. There is no reason why an incinerator cannot be kept as attractive as a

FRONT VIEW OF EASTCHESTER, N. Y., INCINERATOR, SHOWING UPPER TIER OF GARAGES, STACK, AND GASOLINE PUMP



REAR OF EASTCHESTER, N. Y., INCINERATOR, SHOWING INCINERATOR PROPER IN CENTRAL SECTION AND GARAGES WITH DOORS OPEN ON EITHER SIDE

pumping-station or other municipal buildings. Many city officials do not yet realize that to please the eye is in a very large measure to receive the approval of the public.

The refuse disposal of these villages had previously been done on the private contract system, which is always more or less unsatisfactory. The town of Eastchester has taken over the collection and disposal of the garbage and rubbish from the villages of Bronxville and Tuckahoe and the town of Eastchester at large. The rubbish from the village of Scarsdale is also disposed of in this plant. These various villages pay the town a fixed charge for this service.

It was decided to concentrate the municipal activities, such as refuse collection and disposal and street maintenance, all at one central point. A piece of property was purchased on the White Plains Road about 1½ miles north of Tuckahoe, and the plant is located on this site about 500 feet west of the road. It was the intention of the town in purchasing such a large piece of ground to sell the eastern portion on the road for other purposes, but it is now planned to build a high school at that location.

Adjoining this property on the west is a highly restricted residence development in which there are at present about 35 high-class homes, many of which have been constructed since the incinerator has been in operation. Immediately to the south is the Leewood Golf Club, and on the east the Mt. Vernon Country Club.

Incorporated in the building housing the incinerating equipment are sixteen garage stalls for the collection trucks, one repair shop, one storeroom, 1 tool-room, an office, and toilets, as well as a complete three-room apartment with kitchen and bath on the top floor for the man in charge.

The building is of field stone construction with concrete floors and it is steam-heated throughout. The steam is supplied direct from the Decarie steel water-jacketed furnaces. The refuse has given sufficient steam, even with only one of the units in operation, to heat the building without the use of coal.

The natural slope of the property lends itself to the plant, allowing a dirt-fill approach to the second, or charging, floor, of the incinerator section of the building. At each side of the incinerator section are located the other

rooms. There are eight garages opening to the rear of the building on the first-floor level, and an equal number opening towards the front on the second-floor level.

The incinerating equipment consists of two Decarie steel water-jacketed units of 30 tons capacity each per 24 hours, complete with individual fire-brick-lined gas combustion chambers and steam-driven forced draft fans with preheaters.

Each unit has a charging hole 3 feet by 4 feet on the upper floor with removable covers and a cast iron hopper with counterweighted balanced doors between the opening and the furnace. Each of the two furnaces will hold at one time 6 cubic yards of refuse, so that the loads are dumped direct into the furnaces upon arrival and it is not necessary to store refuse about the plant. The charging openings are of sufficient size to permit the passage of barrels, boxes, and even the carcass of a horse without the need of breaking them up.

When the plant was first built, the building and chimney were constructed for the two units, but only one unit was installed at that time. It was found during the first year of operation that this community produced more refuse per capita than the average, and the additional unit was contracted for so as to handle the summer load and additional territory as well.

The second unit was installed and put in operation March 1 of this year. This work was done without shutting down the plant, provision having been made in the original design for such an addition.

The collection equipment consists of seven 1-ton capacity Ford trucks equipped with water-tight steel rear-dump bodies of 3 cubic yards capacity each, with the side-boards in place, and 2 cubic yards capacity each without.

The longest haul to the plant, which is quite centrally located, is about 2 miles. One man and a driver ride each truck, the driver remaining on the truck to trim the load, and the other man collecting the refuse. These trucks make from 6 to 8 loads per day and have proved very satisfactory.

At the end of each day the bodies of the trucks are thoroughly washed down with hot water, a superabundance of which is always available in the plant for this purpose and to thoroughly sterilize the walls and floors of the building each day. In the operation of the incinerator and the collection equipment it is a rule that everything must be kept in a clean and sanitary condition at all times. By care in the original design and by a little daily attention, it has been demonstrated that an incinerator can be kept as clean as any other municipal building.

The plans and specifications for this entire structure were made by the late Joseph F. Musselman, consulting engineer, New York City, who also supervised the execution of the contracts. The building structure was erected by a local contractor, and the chimney and incinerating equipment were installed by the Decarie Incinerator Corporation, New York City.

Pavement Openings in Chicago

ONE of the rules which have been instituted within the last year in Chicago, according to Thomas H. Byrne, Superintendent, Bureau of Streets, Chicago, is that where an opening is made in the street, before that street can be repaired, the opening must be cut back from 6 inches to a foot on solid ground before replacing, so as to give a solid ledge for the setting of the concrete that is placed in that opening. This prevents, as far as possible, the sinking of the subsoil and has proved very effective. It is necessary to watch the public service corporations particularly because of the manner in which they let their contracts for repaving. These contracts are let for the exact width of the trench, and it is only through insistent and close watching that the Bureau of Streets has compelled the contractor to cut back on the trench opening so as to replace the pavement in nearly the same condition it was in originally. It never can be done so well, because the continuous heavy traffic wears it down.

One of the things which have been noted particularly in Chicago is the great number of water leaks which have showed up throughout the city due to the overloaded trucks which still come within the state law, but for which the pavements were never designed. It has been found here and there in every ward throughout the city where heavy traffic is using the streets, that additional work in cutting pavements is caused by the leakage of pipes due to the vibration of the heavy traffic. This is quite a serious problem, and is being taken up by the Board of Local Improvement, which has ordered the base on the streets to be increased in thickness from now on. But, because of the miles of streets that are already laid, the trouble will be experienced for some time, as it is not possible to tear up a street and repave, paying the cost by special assessments, without causing considerable trouble.

Diesel Power for Williamsburg, Ky., Water-Works

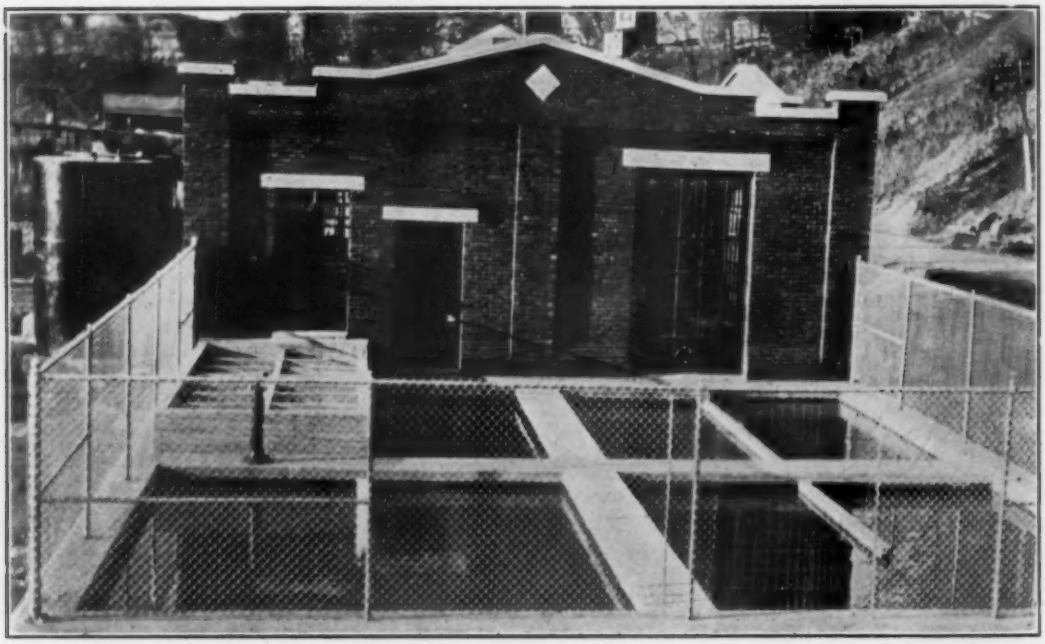
New Power-Plant Reduces Cost of Operation of Municipal Filtration Plant

WILLIAMSBURG, KY., is a modern little city run in a modern businesslike way with present-day conveniences. It is located on the banks of the Cumberland River in a valley surrounded by wooded hills which seem to dwarf the town by their massive ruggedness.

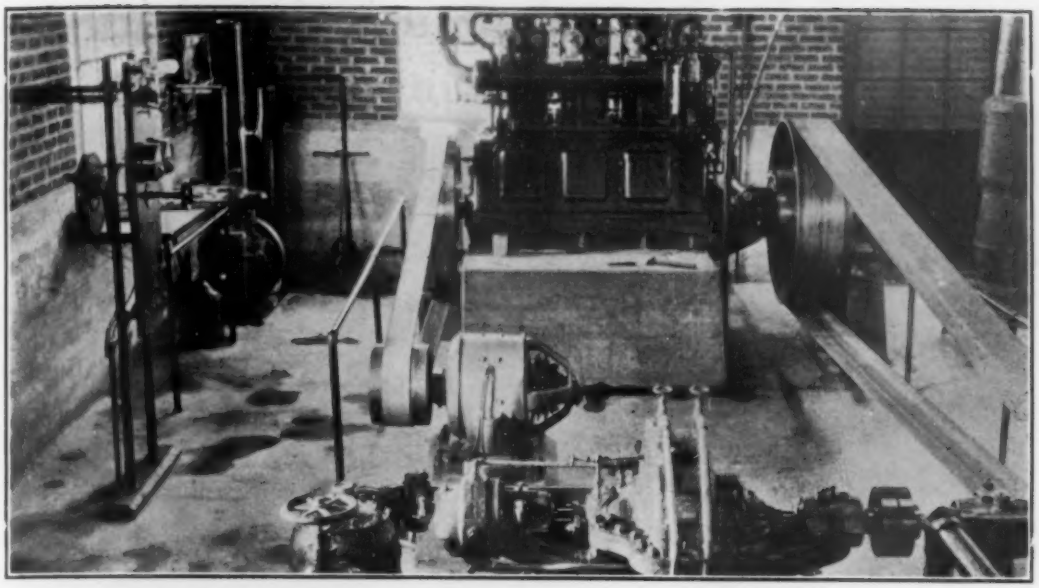
When the city decided to replace its old water-supply, which was steam-powered, with a modern filtration plant, it decided on diesel power instead of steam because of the savings that would be effected. The Williamsburg plant was designed to be modern in every respect and is a model in design, construction, and efficient operation. The building is an attractive brick structure with settling basins of monolithic concrete construction. These basins are neatly built and carefully fenced in, access being available only through the plant building itself, as shown in the accompanying illustration. Water is pumped from the river by an electric motor-driven centrifugal pump, power for which is secured from a Bessemer diesel-engine-driven generator. The water goes to the basins, where it is allowed to settle and is then treated with soda ash and alum to coagulate the remaining sediment and clarify the water.

The settling basins have a capacity of 86,000 gallons, and the detention period is four hours, after which the water goes to the open rapid sand filters which are located inside of the plant building. From these filters the water passes through a clear well of 35,000 gallons capacity placed directly underneath the plant. It is then pumped by a high-head centrifugal pump into the city water system, all that is not used going into a 150,000-gallon capacity standpipe located on a hill 211 feet above the pumping-station.

An interesting feature of this installation is that the plant is located on the north side of the river on the bank opposite the city. This required the laying of the water-mains from the plant to the city under the river. A channel was dug out in the river-bed at low water and the pipe laid in a concrete bed under the river. The reason for this was to take advantage of the elevation of a hill on the north bank of the river for a standpipe. The two pumps in this plant are generally in use, so that the plant operation is a continuous proc-



EXTERIOR OF WILLIAMSBURG, KY., FILTRATION PLANT, SHOWING THE FENCED-IN SETTLING BASINS



INTERIOR OF THE POWER-PLANT OF THE WILLIAMSBURG, KY., WATER-WORKS, SHOWING THE 50-HORSEPOWER BESSEMER DIESEL ENGINE WHICH SUPPLIES ALL THE POWER FOR THE OPERATION OF THE PLANT

ess, water being drawn from the river, filtered, and pumped to the standpipe, from which it is transported by gravity to the consumers.

The entire power required to operate this plant is furnished by a 50-horsepower Bessemer diesel engine which drives the generator, furnishing current for the motor-driven centrifugal pump, and also drives the belt-driven centrifugal pump which fills the standpipe. The duty is 350 gallons per minute against a head of 275 feet for the high-head pump plus the same capacity against a head of 20 to 30 feet for the motor-driven pump.

Operation Costs

The operation of this new plant has been a decided success, and the power unit has proved highly efficient and reliable as well as economical. Operation costs are carefully kept, and frequent checking shows that the diesel engine consumes an average of 2.87 gallons of fuel oil pulling a 50-horsepower load constantly.

Operating records for a month show the economy of the filtration and pumping-plant. With 1,329,000 gallons pumped, the actual plant operating expense was $28.85, exclusive of engineer's salary. This cost covers 253 gallons of fuel oil at 8 cents per gallon, 6 gallons of lubricating oil, 328 pounds of alum at $1.55 per 100 pounds, 155 gallons of soda ash at $2.05 per 100 pounds, and 5 pounds of chlorine at 7 cents per pound.

The total operating cost is as follows: operating expense, including fuel and lubricating oil, alum, soda ash, chlorine, etc., $28.85; engineer, $125.00; light, heat, etc., $2. Interest on the total plant investment was $250. This makes a total of $405.85 per month for the entire plant and represents a saving of 50 per cent over the operating expense of the old-steam-pumping plant alone—a very substantial difference.

Garbage Collection in Sioux City, Iowa

W. H. CARRIGG, Superintendent, City Garbage Department, Sioux City, Iowa, reported at the Sixth Annual Conference, International Association of Street Sanitation Officials, that the vehicles for garbage collection in Sioux City are owned by the collectors. The city, with a population of 80,000, has its garbage removed two or three times a week. The men are paid $7.25 per day for the use of their wagons and maintain them themselves. Garbage is sold at the present time to a hog-feeding concern at $250 a month. Grades in Sioux City range from 2 to 20 per cent, with an average of 8 to 12 per cent, so that they have figured it would not be advisable to install the trailer system. Garbage, ashes, and rubbish are collected for a cost of about $2 per ton. Rubbish, covered with dirt, is used as needed to fill in streets and alleys.

Use of Rock Asphalt and Emulsified Asphalt on County Roads

By S. B. Mylin

County Highway Superintendent of Wabash County, Ind.

SIX years ago, Wabash County adopted the practice of resurfacing its old gravel and macadam highways. Naturally, resurfacing was first attempted on heavy-traffic roads which were requiring excessive maintenance. Tests showed plenty of old metal to carry the traffic; in fact, it was rare to find even small areas where the roadways had broken through to the clay subbase. The only complaint was that the roads were rough and dusty.

Although each resurfacing project presented a different problem, in general our procedure was to shape the old roadway by scarifying and rolling. We then laid, when needed, a thin course of limestone, rolled it until it was thoroughly keyed up, and surfaced the entire roadway with Kentucky rock or emulsified asphalt. The first of these resurface jobs was laid in 1919 in the town of Urbana.

In 1919, in the town of Urbana, this resurfacing was done in the face of critical conditions, as the taxpayers and the newspapers were against us, but they have since reversed their decision. This road, which was built of Kentucky rock asphalt, is going on its seventh year of heavy travel without one cent of maintenance.

In 1922 the taxpayers of North Manchester demanded the Hills and Lakes road from the College north, seven-tenths of a mile, to be resurfaced with rock asphalt. This road, which is very heavily traveled, is going on its fourth year without maintenance.

In 1923 we had a road leading out of North Manchester on the Hills and Lakes road that had been built of asphaltic concrete. This road had seen only six years of travel and had to be resurfaced. We decided to use emulsified asphalt on this road. This road is going on its third year of travel and to date is in fine condition without maintenance.

The next road on the program in 1923 was the Linlawn road, leading from the corporation line of South Wabash. This road was an old road built of stone and gravel. We did not add any new metal to this road at all, just reshaped and rolled the old metal. Then we covered this with emulsified asphalt. This road was resurfaced in 1923—going on three years of very heavy travel and is in perfect condition today without any maintenance.

In 1924 we built 1½ miles on the Hills and Lakes road. This joined to the road we built in 1922, making a total length of 2.2 miles. This road was built of Kentucky rock asphalt.

In 1924 we built two approaches to Wabash—the Walnut Tree road and the Falls Avenue road. These two roads were built of emulsified asphalt.

In 1925 the following roads were built at the costs given:

Rich Valley Road.—16 feet wide with stone berms, 2,320 feet long, 4,120 square yards Kentucky rock asphalt. Cost, $1.29 per square yard.

Linlawn Road.—16 feet wide with stone berms, 3,350 feet long, 4,840 square yards, Kentucky rock asphalt. Cost, $1.34 per square yard.

Laketon Road.—18 feet wide with 2-foot stone berms, 1,600 feet long, 3,200 square yards, Kentucky rock asphalt. Cost, $1.42 per square yard.

East North Manchester Road.—18 feet wide with 2-foot stone berms, 3,320 feet long, 6,640 square yards, Kentucky rock asphalt. Cost, $1.33 per square yard.

Somerset Road.—18 and 24 feet wide, 2,400 feet long, 5,067 square yards, emulsified asphalt. Cost, $1.53 per square yard.

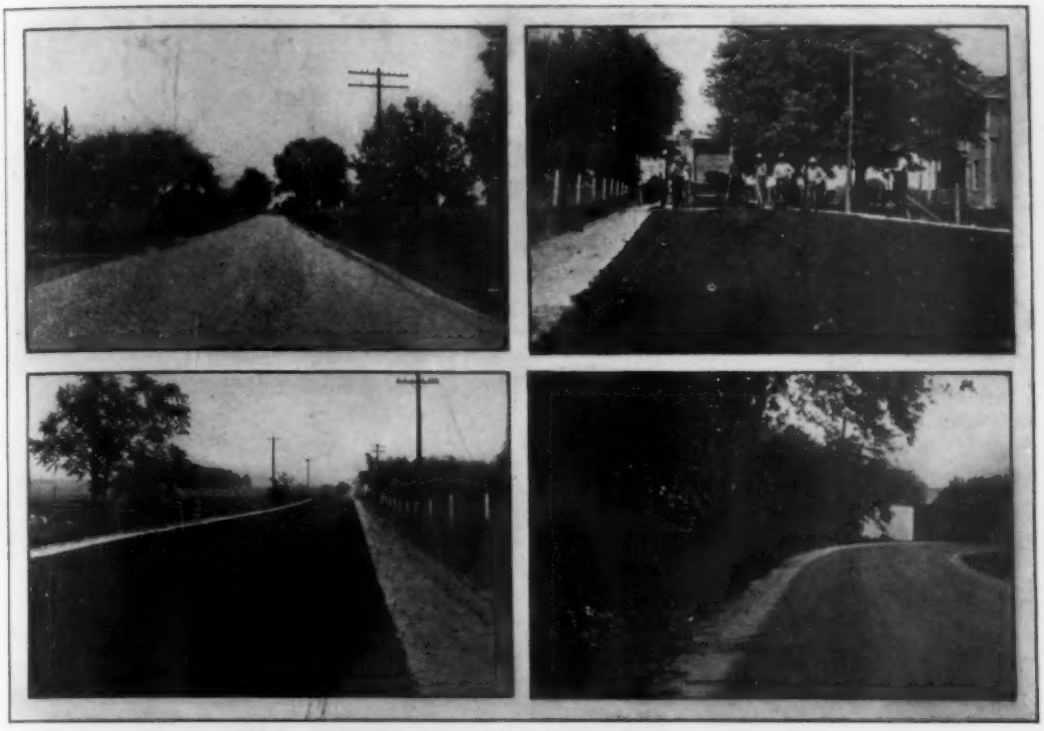
Chippewa Road.—18 feet wide with gravel berms, 3,200 feet long, 6,400 square yards, emulsified asphalt base and Kentucky rock asphalt top. Cost, $1.52 per square yard.

Stop and Figure

Just because an old gravel or stone road is rough and unpleasant to travel, many citizens and even many engineers are disposed to condemn it entirely and demand new pavements. Stop and figure the miles of such old roads in your county, then multiply by $30,000, the average cost of new pavement, and you will be staggered by the money required to reconstruct your roads. You will realize, just as we did, that some other solution of your road problems must be found.

Combining Rock Asphalt and Emulsified Asphalt

The latest resurfacing project in Wabash County was in 1925. This was the Chippewa road leading northwest from the city of Wabash and subject to very heavy traffic. The old gravel road was a source of constant complaint and heavy maintenance. In reconstructing this road we first scarified and re-



FOUR STEPS IN LAYING A ROCK ASPHALT PAVEMENT

Top left.—Macadam base ready for Kentucky rock asphalt. Top right.—Laying the asphalt. Bottom left.—Asphalt laid and ready for roller. Bottom. right.—Asphalt rolled and road immediately opened to traffic

shaped it by rolling. Where there was any evidence of weakness in the old base, it was strengthened by adding new limestone, and thoroughly compacted. We then laid a course of emulsified asphaltic concrete, 1½ inches thick after compression, and over this a wearing surface of Kentucky rock asphalt, approximately ¾ of an inch thick compacted.

The county has used a great deal of rock asphalt and emulsified asphaltic concrete with good results. The idea of combining the two materials on this job was to develop a type which would be both serviceable and economical. The emulsified asphaltic concrete was used as a binder course and could be laid much thinner than waterbound limestone. The rock asphalt was used as a wearing surface and waterproofing. We felt that with the emulsified asphalt binder course we could materially increase the strength of the road with very little added cost. This road at the present time is in very good shape.

We increased our road maintenance levy for 1926 six cents without opposition, but our heaviest farmer taxpayer said that we should have made it higher, as they want more resurfaced roads built by the Highway Maintenance Department. There is not one element in Wabash County today that is fighting us on this kind of program.

ACKNOWLEDGMENT.—From a paper read before the Twelfth Annual Road School, at Purdue University.

Automobiles = Scarlet Fever + Whooping-Cough

"The automobile is as great a menace to child life today as scarlet fever and whooping-cough combined," according to statistics compiled by the Metropolitan Life Insurance Company. Deaths from automobile accidents, according to the company's figures, have increased 50 per cent since 1920, two-fifths of the deaths being among children under 15. In other respects 1925 is pronounced a banner year among the Metropolitan's industrial policyholders, who constitute one-seventh of the total and one-fourth of the rural population of the United States and Canada. Big gains were made in reducing death-rates from measles, scarlet fever, diphtheria, and whooping-cough—the four chief diseases of children. A low record was also established for diseases associated with maternity.

Trenton's New Sewage Disposal Plant

A Description of the System Now Under Construction

By Alfred C. Gregory

Engineer, Sewers and Water, Trenton, N. J.

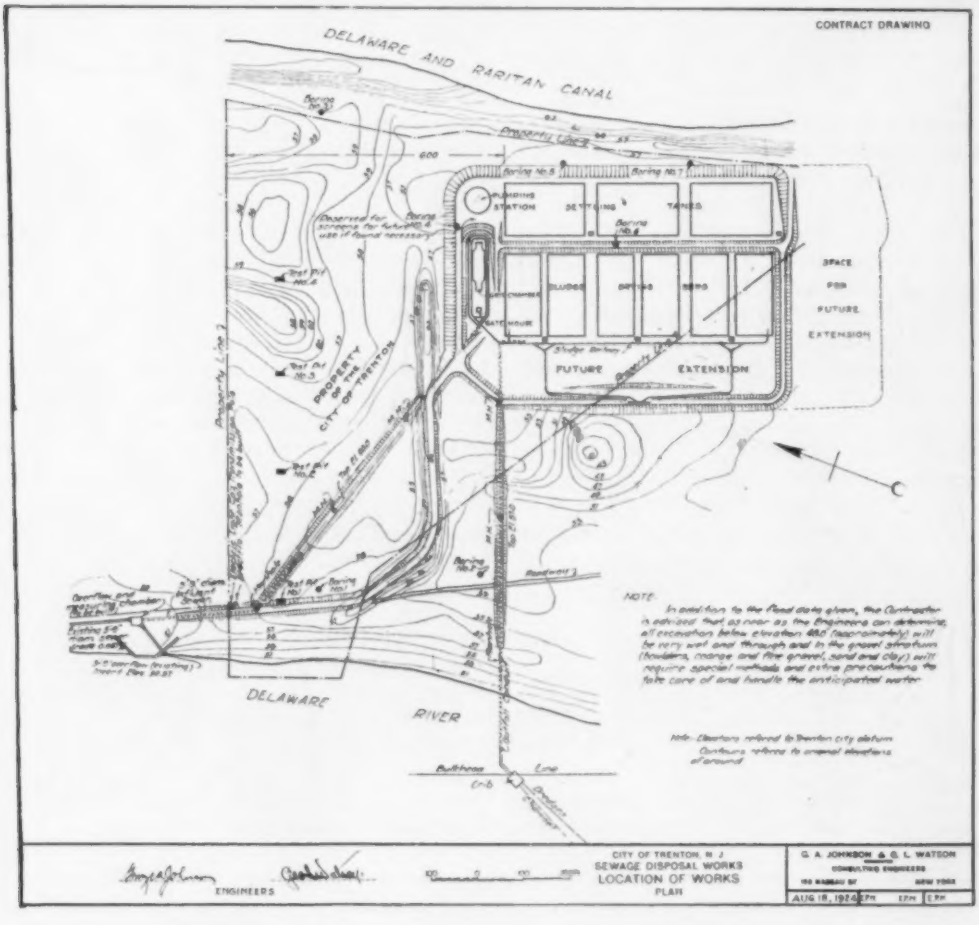
THE problem of sewage disposal at the present time may be comprehended in the following list of processes: (1) clarification; (2) oxidation; (3) disinfection. These may be used singly or in combination, depending usually upon site areas available and upon the amount of dilution of the disposal plant effluent in the stream or body of water into which the effluent discharges.

Clarification

Clarification is to Trenton the important one of the three steps, for it is the only one which we propose to use.

The term clarification simply means the clearing of the sewage of its content of suspended solids. We speak of suspended solids, and also solids in solution, such as dissolved salt or any one of the many chemical combinations which occur in raw sewage. It is the suspended solids floating or present in the sewage, however, that concern us, for we propose to do nothing more than to remove from the sewage its suspended solids.

It is rather surprising to most people that a physical analysis of ordinary sewage usually discloses the fact that it contains less than 1/1,000 of solid matter; in other words, at least 999 parts out of 1,000 parts are water, and the one part which causes all the trouble is made up of solids in suspension and solids in solution. Moreover, the solids in solution



GENERAL VIEW OF THE SITE OF THE TRENTON SEWAGE DISPOSAL PLANT

are apt to be about two-thirds of the total solids, leaving perhaps one-third in suspension. and it is because of this one-third of one of the 1,000 parts of sewage that the city of Trenton finds it necessary to build its disposal plant.

The average daily dry-weather flow of sewage from our city is in the neighborhood of 20,000,000 gallons per day. This figure does not mean much unless we may in some way visualize the volume comprehended. Let us assume State Street to be 50 feet wide between the buildings on each side of the street, and let us also assume that it is covered with sewage to a depth of 5 feet from the D. & R. canal to Parkside Avenue.

The ordinary person wishing to contemplate the merchandise lying behind the water-tight windows of a store near State and Broad, would be immersed in sewage up to his neck. Such a volume, of course, includes not only house sewage but wasted water and an enormous amount used by industrial plants for various purposes and discharged into adjacent sewers.

Reason for Construction

To come back to the solids in suspension. When we have succeeded in separating these from the raw sewage, we call the black semi-liquid mass which we obtain—sludge. Sludge is the reason for the construction of our plant. If this were only solids in solution, we might discharge the sewage *in toto* into the Delaware without any particularly ill effects. The volume of the river is so great as compared with our volume of sewage that the resulting dilution would render the contained sewage harmless. It is as though one were to place one drop of muriatic acid in a tub of water. The acid is chemically active and the result would be that in an exceedingly short time the acid would not exist as an acid. Some of it would become hydrogen gas and would rise from the water into the air, and the chlorine contained in the acid would combine with organic matter or salts ordinarily present in water. Similarly, when a relatively small amount of sewage free of solids is diluted in a large body of water containing plenty of free oxygen, as the Delaware River, chemical reactions at once are set going and what was once putrescible sewage matter is changed into chemical forms which are no more putrescible than stones or pieces of glass.

Going back again to the suspended matter and to our visualization of the daily sewage flow, we should find that the imaginary street full of sewage—20,000,000 gallons—would at once begin to deposit its suspended matter on the street surface. If this process went on until the sewage were entirely free of suspended matter, there would be underneath the entire volume of liquid a black, putrescent layer of sludge. If we take the entire deposit of semi-liquid sludge and place it 6 inches deep between curbs 30 feet apart, it would extend a length of 4 city blocks each 400 feet long.

The 20,000,000 gallons of city sewage would cause but little trouble, were it not for the sludge deposited in the river and along its shores soon after it leaves the sewer outlet.

GENERAL VIEW OF THE 4-FOOT FORCE MAIN, LOOKING NORTH

Referring again to the sludge deposits, above shown, it is easy to visualize what is happening below and opposite the sewer outlet when day after day a great mass of sludge is deposited. It is also easy to imagine the wrath of property owners on each side of the river for miles of its length when they find their beaches covered with all manner of objectionable matter which is not only unsightly but smells to heaven, particularly in warm weather. In the neighborhood of the sewer outlet and also some distance below it there are great banks of sludge in an actively putrescent state. In the interior of such banks chemical changes are taking place, gas is formed which, when it has become great enough in volume, causes pressure enough to break up the banks and they go floating down the river in large masses, and are capable of flotation by reason of the gas imprisoned within. All of the above-described trouble from sludge and floating solids is the reason for the construction of a sewage disposal plant. It will be seen that the necessity is not so much because of unsanitary conditions developed, as because of the great nuisance that has been created. Our problem, then, simply stated, is to take from the sewage the largest possible amount of contained suspended solids and, having them, find the best means of disposing of them. The effluent from which the solids have been taken will be discharged into the river and will look like slightly discolored water and as diluted by the river water will be inoffensive.

Methods Used

The modern methods of effecting a removal of solids from sewage is by means of screening or by some method of sedimentation. In the former method, the sewage after having passed through coarse screens designed to take out such matter as sticks, stones, cabbage stalks, etc., passes through very fine screens which remove a considerable amount of the remaining solids.

In the method of sedimentation, the sewage is allowed to flow very slowly through large tanks. It may be retained in the tanks from two to four hours, during which period about everything which is capable of settling goes to the bottom, and the clarified effluent passes on and is discharged from the plant.

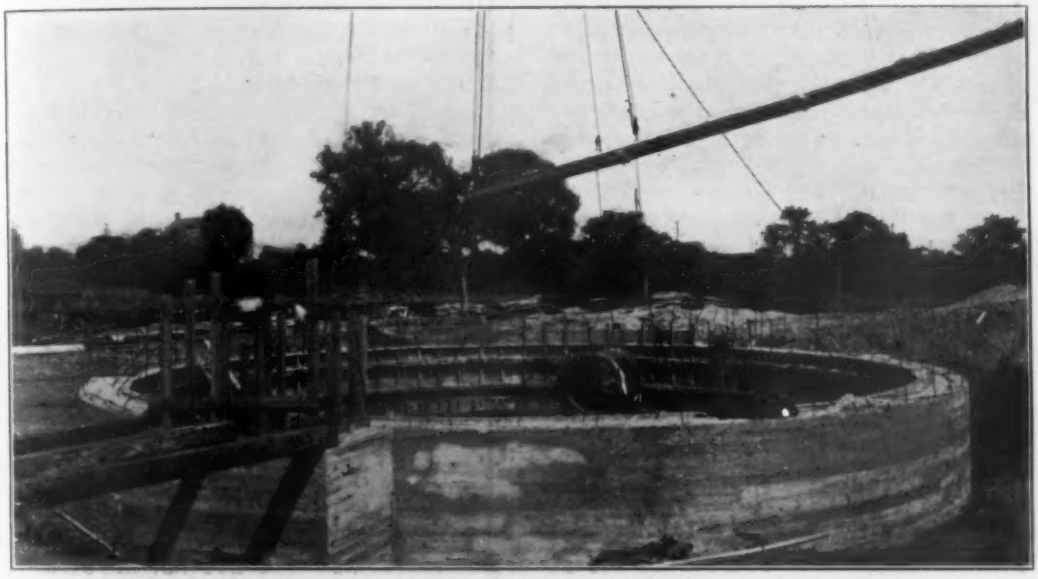
The Imhoff Tank

The modern type of settling or sedimentation tank is known as the Imhoff or two-story tank. These are sometimes circular, but the tendency now is to make them rectangular. The sewage entering flows very slowly down the length of the tank, and as it flows sediments its suspended solids, which fall upon sloping bottoms. The solids roll on down the sloping sides and passing through a slit, are deposited into a chamber below, known as the sludge digestion chamber. The slit is so arranged that gases from the digestion chamber cannot get back into the chamber above but must pass to large apertures known as gas vents. When the solids have reached the sludge digestion chamber, they are allowed to remain there for long periods, possibly for months.

Putrefaction, principally through the agency of what is known as anaerobic bacteria, immediately sets up in the digestion chamber. The same process goes on when masses of vegetation, as leaves, decay in the woods. Putrefaction and, later, oxidation, goes on until one finds that the resulting leaf mold has very small resemblance to original putrescent vegetable growth. The same sort of thing goes on in the sludge digestion chamber; and after the so-called digestion is complete, the sludge may be removed and dried, and it will be found that the resultant sludge has lost its putrescent characteristics and is not very different from the leaf or vegetable mold of the woods. The Imhoff tank is the outstanding feature of the proposed sewage disposal process for Trenton.

Connecting with Present System

All of the sewage of Trenton flows into what is known as the main intercepting sewer on Lamberton Street. This sewer, known to the Department as No. 5, becomes bigger as it gets farther down toward the outfall, where it is 5 feet 9 inches in diameter, since at various street intersections it receives contributions from large trunk sewers from various parts of the city. The elevation of the bottom or invert of the outfall is but 2 feet above ordinary high tide. It is therefore necessary to pump the sewage in order to accomplish its flow through the disposal plant by gravity; and the plant itself must be sufficiently high



PUMPING-STATION FOR THE NEW TRENTON SEWAGE DISPOSAL PLANT UNDER CONSTRUCTION
This illustration shows the outside ring wall completed and the 54-inch cast iron discharge from the pumps in place

to preclude any possibility of its being submerged at times of river freshet. The plant begins at the outfall at a point in No. 5 sewer just where it turns from Lamberton Street to enter the river, where will be built what is known as an overflow chamber. This will be so arranged as to allow the ordinary sewage flow plus some storm flow to proceed on its way to the plant instead of the river, where it goes at present. In times of heavy storm the overflow chamber will divert the surplus storm flow at once into the river. It is presumed that with a greatly diluted sewage from No. 5 by reason of the storm, no evil effects in the way of nuisance will be created in the river. It should also be remembered that heavy storms usually last for only short periods of time, consequently the direct flow of a portion of the contents of No. 5 sewer will last for a very short period of time. From the overflow chamber the sewage will pass down a continuation of No. 5, still 5 feet 9 inches inside diameter, and will enter what is known as the grit chamber. The grit chamber is an open concrete structure 21 feet wide and 108 feet long. The sewage, on entering it, passes through a coarse screen consisting of steel bars ½-inch in thickness and 1½ inches apart. After passing through the bars, the flow goes on more slowly through the grit chamber, which has a depressed floor. Coarse materials are caught on the bars, and a large amount of mineral matter is deposited upon the floor of the grit chamber.

After passing through the grit chamber, the sewage flows to the pumping-station and into a pump-well. The pumping-station is equipped with six powerful DeLaval double-suction centrifugal pumps actuated by electric motors. The operation of the pumping-plant will be largely automatic. It will be so arranged that as sewage flow increases and the depth becomes greater in the pump-well, the pumps will go into operation automatically one after the other. Automatic warning signals will operate in case anything goes wrong. In the matter of well-designed and efficient equipment, materials of construction and workmanship, the writer has no hesitation in saying that better cannot be found.

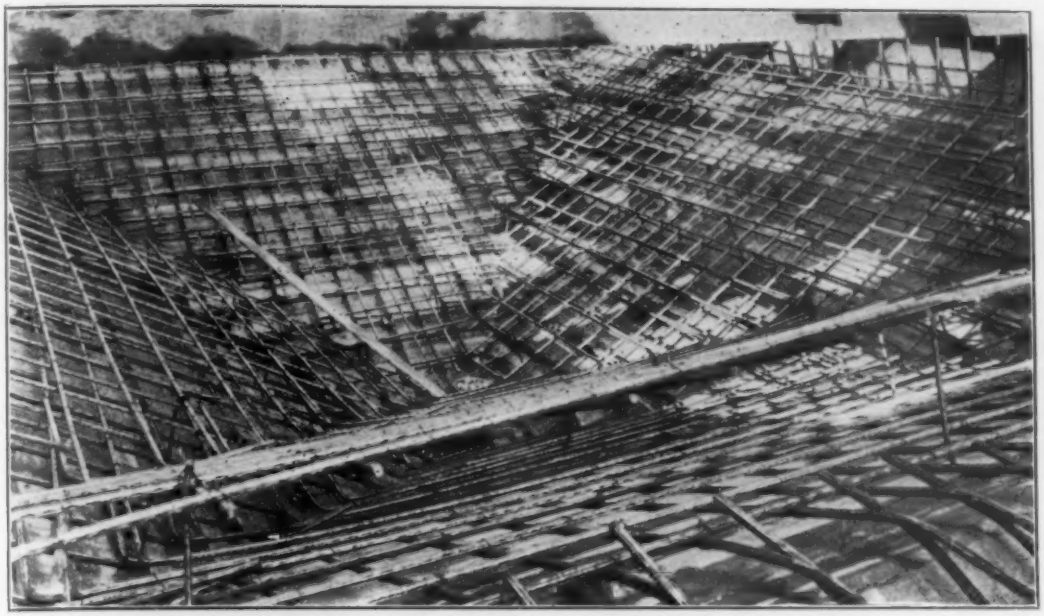
At the pumping-station the sewage is raised 31 feet to the level of the upper water surface of the Imhoff tanks. There are twelve of

these, of which nine or ten will be in service at any one time, leaving the remaining ones in reserve. The sewage, after being pumped and before it enters any of the tanks, passes through a Venturi meter, by means of which the entire flow is measured, so that for any unit of time we shall know with precision just how much sewage enters the plant. The sewage will flow at a hardly perceptible rate through the tanks, dropping its solid contents, as has been stated, through slots at the bottom of the upper story. In the lower story, sludge digestion will proceed. It has been found that the greatest amount of sedimentation takes place nearest the entrance end of the tank. The tanks are therefore so arranged that when the operator finds that a considerable amount of sludge has accumulated at the entrance end of the digestion chamber, the flow may be changed so that the sewage enters at the opposite end. The tanks are each 33 feet wide and and 125 feet long, and from top to bottom 33 feet 2½ inches. The bottoms are about 20 feet below the present surface of the ground. Cast iron pipes go from the bottom of the sludge digestion chambers and come out at points in the tank sides 4 feet 9 inches below the upper water surface of the tanks. The sludge is in a semi-liquid condition, and so, when it is desired to draw off some of it, it is only necessary to open a valve in the cast iron sludge pipes above mentioned, and the pressure of water from above drives the sludge through the pipe and into a concrete channel where it flows on down to the sludge drying beds. These beds are at a lower elevation than the concrete channel mentioned. It is therefore easy to distribute the semi-liquid sludge by gravity flow over the drying beds.

Each bed consists of a layer of sand and gravel from 10 to 14 inches thick, the coarser gravel being at the bottom. There are six beds each 80 feet wide and 182 feet long. Their function is to allow the water to drain out of the sludge to underdrain pipes at the bottom, where it passes into the outlet sewer and into the river. When the sludge has dried, so that it may be spaded, it is removed from the bed. It will have some manurial value, but in most cities there is but little demand, and the problem is to get rid of it in the most economical way possible.

In sewage disposal plants, the most difficult question to solve is the treatment and final disposition of sludge. A great deal of research and investigation has been spent in finding economical methods of getting the water out of it, and also in trying to find some commercial value when this has been done. Common practice is to drain it on filters, just as we propose to do, and to use it for filling low ground. The writer has seen many acres covered by hills and valleys of sludge. After the liquid sewage has completed its trip through the tanks and has dropped its sludge into the digestion chambers below, it flows into an inter-

GENERAL VIEW OF GRIT CHAMBER, LOOKING WEST



REINFORCING IN PLACE FOR HOPPER BOTTOM OF IMHOFF TANKS

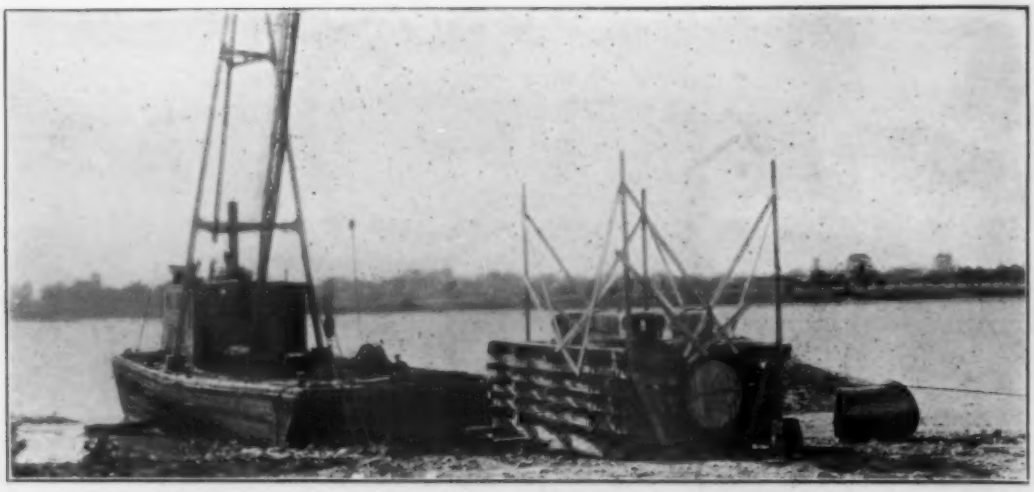
cepting conduit and then passes on to the Delaware River.

The plant, as above outlined, should be sufficient for the needs of the city for the next twenty-five years, unless it be found, at some future date within that period, necessary to subject the sewage to additional treatment.

At the beginning of this article, it was stated that the three present-day sewage disposal processes are clarification, oxidation, and disinfection. It has been shown that we propose to go no further than the completion of the first step, namely, clarification. If at some time in the future, we are required by the health authorities of the state to proceed still further, we will subject the effluent which comes from the tanks to a treatment designed to oxidize its contents of organic matter. This is usually done by spraying the effluent over beds 6 to 8 feet deep consisting largely of broken stone. Bacterial growth is developed upon the stone surfaces, and the liquid in passing over the broken stone comes into intimate contact with the bacterial growth on the stone surfaces. Such bacteria act on the organic matter in the sewage, changing it chemically, so that if the process is complete, the liquid when it emerges from the drains at the filter bottom is no longer putrescent and may be discharged into streams of very small volume.

If it be considered necessary to kill all bacteria coming from a plant, we use the third process cited, namely, disinfection. This is done by subjecting the effluent to a dosing of some disinfectant, as liquid chlorine, chloride of lime, etc. By the latter process, it is possible to insure that no disease germs get beyond the plant itself.

It is believed that the many problems of design and construction have been successfully solved. As an instance of such problems, a statement follows of the method adopted for overcoming the presence of water interference with the work. On the site of the plant, water is found at a depth of 7 to 9 feet below the ground surface. The upper surface is alluvial soil, below which is fine sand gradually growing coarser, until at a depth of below 16 feet we encounter an old river bottom consisting of gravel and cobblestones. A pit was sunk to a depth below the old river bottom, and powerful pumps were placed therein. Terra cotta pipes with open joints were placed under the plant structures, and emptied into the pit. Pumping started and gradually lowered the ground-water surface to a level of more than 20 feet below the normal ground surface. By this means it has been made possible to build the plant in entirely dry ground without the interference and enormous expense of dealing with water at each individual structure. The contractor, The John P. White Company, of Passaic, N. J., has handled the construction problems of whatever nature very cleverly and efficiently



GENERAL VIEW OF OUTFALL OPERATIONS ON THE DELAWARE RIVER

and is producing excellent work.

The consulting engineer in charge, Colonel George L. Watson, has evolved what we are sanguine will be the best and most efficient plant in the country. He has his finger on the pulse of the project all the time and is as careful of construction as he was of the design of the plant.

The work was authorized by the City Commission May 8, 1925, and the contract time terminates May 25, 1926.

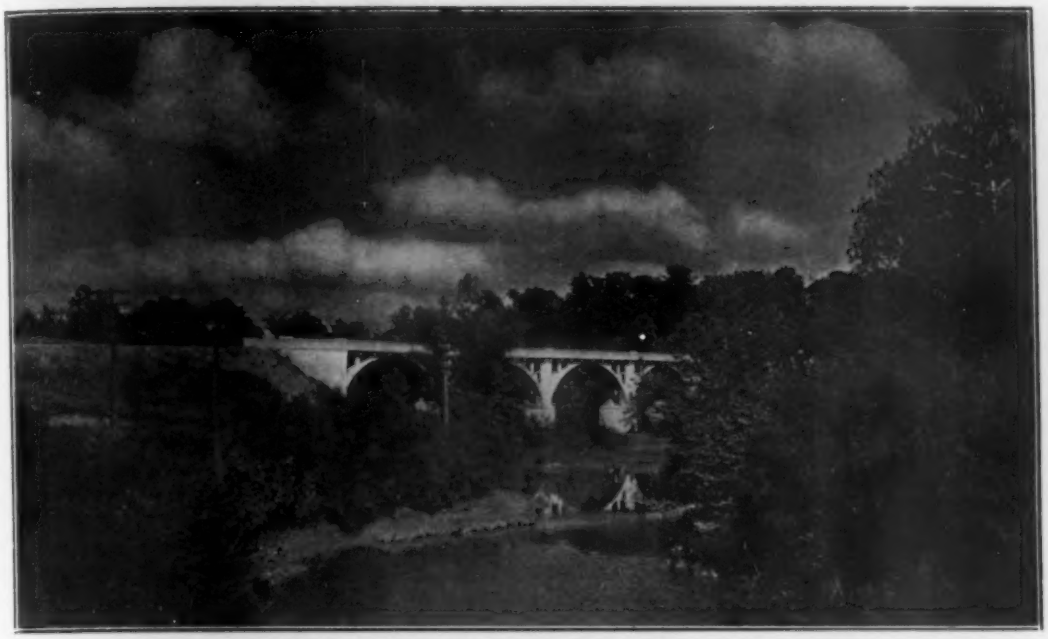
The members of the City Commission are: Frederick W. Donnelly, Mayor and Director of Department of Public Affairs; Abram Swan, Jr., Director Department of Public Works; George B. LaBarre, Director of Public Safety; Edward W. Lee, Director of Department of Finance; George W. Page, Director of Department of Parks and Public Property.

The work is included in the operations of the Division of Sewers and Water, one of the divisions under the direction of Abram Swan, Jr.

THE SITE OF THE SLUDGE DRYING BEDS

The Economics of Sewage Sludge Disposal

For an article on this subject, by T. Chalkley Hatton, Chief Engineer, Sewerage Commission, City of Milwaukee, see page 272 of the 1926 Municipal Index.



DEER CREEK BRIDGE ON STATE ROAD BETWEEN TERRE HAUTE AND INDIANAPOLIS

An Attractive Concrete Bridge in Indiana

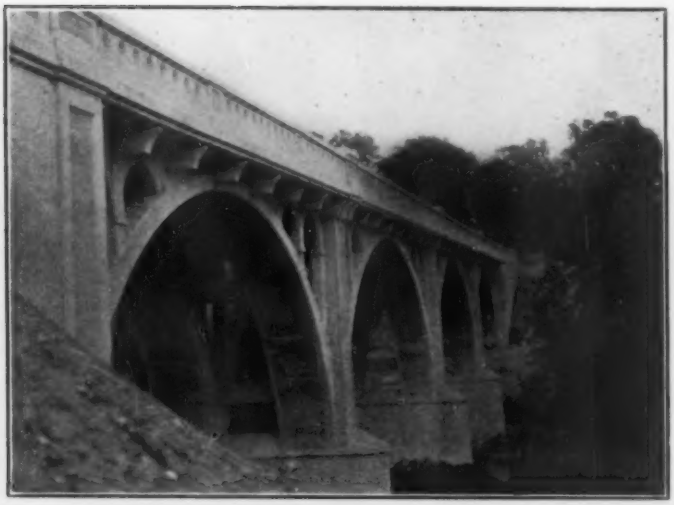
By William J. Titus

Chief Engineer, State Highway Commission, Indiana

THE new concrete bridge at Deer Creek, which is about half-way between Terre Haute and Indianapolis, takes the place of an old low-level steel bridge on stone ashlar abutments built many years ago, and eliminates steep grades and sharp and dangerous turns on the approaches to the old structure. The total cost of the new bridge, which required 1,560 cubic yards of concrete and 123,500 pounds of reinforcing bars, was $44,024.62, including approximately 300 cubic yards of rock excavation and 10,110 cubic yards of approach grading work. The bridge is located on State Road No. 3 in Putnam County, which has recently been designated as U. S. Road No. 40 between San Francisco, Salt Lake City, Denver, Kansas City, St. Louis, Indianapolis, Baltimore, and Atlantic City.

This bridge has four twin-rib spans of 60-70-70-60 feet and a total over-all length of 347 feet. The roadway is on a 2 per cent grade and is a reinforced concrete slab of 20 feet clear width, which was poured integral with the floor beams and stringer in order to secure the benefit of T-beam action. The hand railings are of monolithic reinforced concrete with openings in the dado to harmonize with the arched openings in the spandrel walls of the arches.

There are easy curves in the road at each end of the bridge so that traffic has a view of the side of the structure, and on this account special care was taken to secure better lines and dimensions and to polish the concrete surfaces so that they present a uniformly smooth and natural-colored appearance. This polishing was done by removing the form marks and other irregularities with a wood float within twenty-four to forty-eight hours after the concrete was poured, and by a subsequent polishing with a carborundum brick and clean water after the concrete had set for two weeks or slightly longer. Careful attention was also given in both design and construction to the details of contraction and expansion joints in order to avoid the unsightly and sometimes dangerous cracks in the concrete and the spalling of the concrete at the construction joints in the hand railing which are so likely to occur on concrete arch bridges, particularly those on which the concrete arches



A NEAR VIEW OF DEER CREEK BRIDGE, SHOWING DETAILS OF ARCHES

are cast late in the season when the weather is comparatively cool. The piers and abutments are founded in the limestone bed of the stream; no attempt was made to anchor them to the stone with reinforcing bars, but footings were spread to make a stable structure. The bed of the stream is approximately 45 feet below the floor level at a point directly above the dry-weather channel. The matter of flood discharge capacity was of no importance, so that the faces of the piers and abutments are normal to the center line of the roadway, although the stream crossing is on a heavy skew. The location and height of the bridge and the grade over it were determined largely by the necessity for crossing the ravine in which Deer Creek is located, instad of by the required waterway.

The substructure is made of 1:2½:4 concrete, and all arch ribs, columns, beams, girders and floor slabs of 1:2:3½ concrete, these proportions being only approximate and a cement content of 1¼ and 1½ barrels respectively being required for these two approximate mixtures. The abutments are of the U-type and the wings are flared on the arc of a circle with transverse tie beams buried in the fill at approximately 7-foot centers horizontally and 9-foot centers vertically. All these tie beams are 12 x 24 inches in section, with varying amounts of reinforcing. All these beams have gabled tops, but this practice has been discontinued in later structures because our laboratory experiments on small-size models of abutments indicate that such gabling may tend to increase the arch action of the fill between the tie beams and consequently increase the loads carried by the tie beams. There has been some question in our minds with regard to the loads which are actually carried by these tie beams, and we have therefore arranged, in cooperation with the U. S. Bureau of Public Roads, for running tests on an actual U-abutment of unusual height with pressure cells buried in the back-filling.

Taking the "Hurdles" Off the Highways

THE world's record for the 220-yard dash is 20 4/5 seconds.

The world's record for the 220-yard low hurdles is 23 1/5 seconds.

Twelve per cent more time is consumed in making the same distance over the obstacles.

Quoting these figures in an article in the March issue of the *Concrete Highway Magazine*, Robert Kingery, Secretary of the Chicago Regional Planning Association, points out the fact that on our highways and on the connecting boulevards and city streets there are many things which conspire to have the same effect on motor traffic that hurdles do on the track athlete. Citing some definite examples in the Chicago region, Mr. Kingery says:

"There are situations where traffic lanes totaling 70 feet in width lead into one only 20 feet wide; where only two moving lanes of vehicles can use a 70-foot pavement; where hundreds of cars are blocked for long periods at railroad grade crossings; where a pavement 54 feet wide connects directly with one 36 feet wide; where there is a sharp jog in the route in the business district of a city; and where parking reduces the roadway to not more than three lanes of moving vehicles; where a 40-foot pavement divides into two 17-foot lanes each carrying a car track, then widens to 48 feet; where this 48-foot pavement ends in two 9-foot pavements with 18 feet of unpaved car track zone in the center, and cars are parked on the 9-foot strips; where right-angled turns cause every car to slow down and turn with great care; where there are abandoned street-car tracks and uneven pavements in a busy city. All these conditions are found on one of the most heavily traveled roads in the Chicago region, each item serving as an obstacle to smooth-flowing traffic.

"To lower or remove these 'hurdles' the engineers and officials who have the authority to do so are meeting face to face, and, as rapidly as the meetings can be arranged, are agreeing first on the necessity, and then on the method of procedure, and finally on a detailed schedule of actual construction work."

Power-Plant and Dam of Tacoma's Municipal Electrical Utility

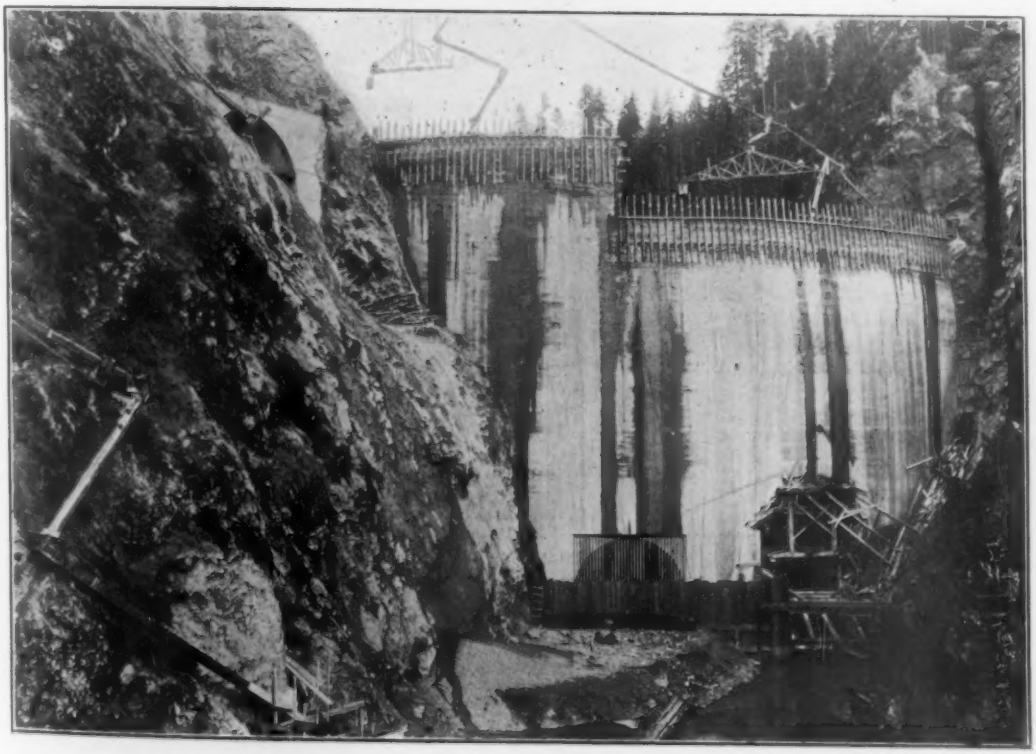
THE NISQUALLY POWER-HOUSE, WHICH HAS A CAPACITY OF 38,000 HORSEPOWER

The water to operate this plant is supplied by the melting glaciers of Mount Rainier

THE UPSTREAM SIDE OF THE CUSHMAN DAM

The power-house is located about 800 feet downstream and is supplied through the intake shown about half-way up the dam

(See also article in THE AMERICAN CITY, April, 1926, page 424.)



Street Paving in a City of 8,000

By J. E. Williams

MURFREESBORO, a city of 8,000, and the geographical center of Tennessee, is probably one of the best-paved cities of its size in the country. It is the seat of Rutherford County. The city is laid out on the plan that was used in county-seat towns many years ago—the court-house in the center of a public square, with the business houses facing it. The streets about the Court House Square in Murfreesboro were paved in 1915 with 1½-inch asphaltic concrete laid on a limestone macadam base. They are in first-class condition to-day after ten years' service and have required little maintenance.

SOUTH CHURCH STREET, MURFREESBORO, TENN., WHICH IS A SECTION OF THE DIXIE HIGHWAY

This street has been treated with one application of Texaco special macadam binder

THE PUBLIC SQUARE, MURFREESBORO, TENN., WHICH IS PAVED WITH ASPHALTIC CONCRETE CONSTRUCTED IN 1915

Practically no maintenance has been required since this pavement was laid

The streets in the residential section are of compacted gravel. R. E. Lowe, City Manager, has been using Texaco Special macadam binder for cementing the gravel, producing a smooth and dustless wearing surface. The resident property owners are very much pleased with this treatment and are asking that more streets be treated in the same manner. The method of treatment is simple and can be used by any municipality at small cost with the same results. Murfreesboro uses one-third of a gallon of asphalt binder to the square yard. The application is put on hot with a pressure tank. Pea gravel is immediately spread over the whole, and traffic is permitted to use the street in a few hours. The traffic tends to drive the small gravel into the asphalt. As the oil penetrates the old gravel base, the street becomes hard and assumes the appearance of an asphalt pavement.

After the street has been used for a few months, the same operation is repeated, using a like amount of asphalt. The street is then in good shape for a year or more. Possibly some streets will need a small amount of asphalt oil applied once a year for three years, which would mean one gallon of oil to the square yard. A street treated in this way would then give several years of excellent service without further expenditure for asphalt oil and with little attention to maintenance. Many cities are using this economical means of insuring good streets.

Country Advantages for City Dwellers

Excerpts from a Recent Report to the Boston Park Department on Future Parks, Playgrounds and Parkways

By Arthur A. Shurtleff

Landscape Architect

THE small town, the village, and the isolated home have become during the past fifty years competitors or near-competitors of the city and not mere feeders of population to the cities. I mention this competition not as an approach to an argument regarding the merit of the city as contrasted with the country or the small town. No agreement can be reached or need be sought on this debatable matter, in which personal taste and training are involved. The world would be the poorer if either of these domains prevailed at the expense of the other.

I mention this competition to show that the parks, playgrounds and parkways of a city like Boston must be regarded to-day in a new light. Fifty years ago their purpose was to give the city dweller recreative escape from the stresses of city life, to make amends for the confinement, darkness, noise and close air of the streets, of the factory, and even of the home, by providing opportunities for exercise or play in the open air and for contemplation of natural landscape in areas of large size. Open spaces for recreation were regarded as savers of human life, conservers of vitality, the humanities, and certain kinds of delight. These functions will always continue to be the large, necessary, and compelling purposes for the establishment of parks, and cannot be delegated to other types of recreation like the stage, the concert hall, the museum, or the gymnasium; but a new function has been added or is being added to these. That new function is the service of the park, playground, and parkway, when admirably designed and maintained, to compete successfully with the natural opportunities for recreation in the open country in and about towns and villages. If a city can meet that competition, it need not fear shrinkages of its size or of its invested treasure as far as a backsetting of the tide of population from the

CHARACTERISTIC PARKWAY SCENE NEAR BOSTON IN THE YEAR 1902, SHOWING HORSE-DRAWN BUGGIES, SULKIES, CARRYALLS, AND RACING RIGS

After snowfall, horse-drawn sleighs appeared in similar or even greater numbers. There were then about 23,000 automobiles in the United States. Today there are more than 20,000,000

country to the city is concerned within the realm of these new forces of change.

For example, if a city can provide very extensive and excellently administered bathing-beaches and other attractive water-front recreative facilities and acquaria, large areas embracing exceedingly fine woodland, fields and streams composing notable landscapes and having vegetation of marked loveliness and interest, large areas of ground perfectly arranged for athletic sports and games and fully developed for public reception and use, it is highly probable that a very much greater number of men who prefer the country districts would forsake the small community and seek the city to enjoy these facilities, if they were easily accessible and could be used with reasonable freedom. On the other hand, if these facilities were small, cramped, shabby, or badly administered, I conceive that one of the strongest bonds of the city upon men, women, and children would be sundered in these days when excellent transportation facilities are general and when new living conditions make a change of residence either to the individual or to the family a simple matter.

The Region of Use of Individual Parks and Playgrounds

If the whole purpose of parks and playgrounds were to accommodate long-distance visitors, or to provide only seasonal recreation or special exhibitions, the problem of designing a park system would be relatively simple. Only a few well-equipped open spaces of good size and of the needed kinds would be required under such circumstances, and their distance apart or their distance from the homes of their patrons would not form an important factor. Indeed, one centrally located and easily accessible area of large extent and embracing all these features properly combined or separated might accomplish these purposes satisfactorily. In fact, as we know, the problem is vastly more difficult and more complicated. The needs of another group of visitors must be met. These patrons are the children, the mothers and nurses, and younger boys and girls of school age, and older persons who need parks and playgrounds for daily use throughout the whole year, and who can reach them only by walking. Not all children or their elders avail themselves, it is true, of such facilities every day, but the daily demand is great, and year by year it is becoming greater. Year by year the value of such recreative opportunities, constantly available to the population of modern cities, is becoming more important, both to sustain the physical well-being of communities and to safeguard from depreciation the vast treasure invested in cities. It is the popular and constant demand, however, and not the reasoning about the demand, that is bringing local parks and playgrounds into existence in Boston for use of the near-by families and individuals.

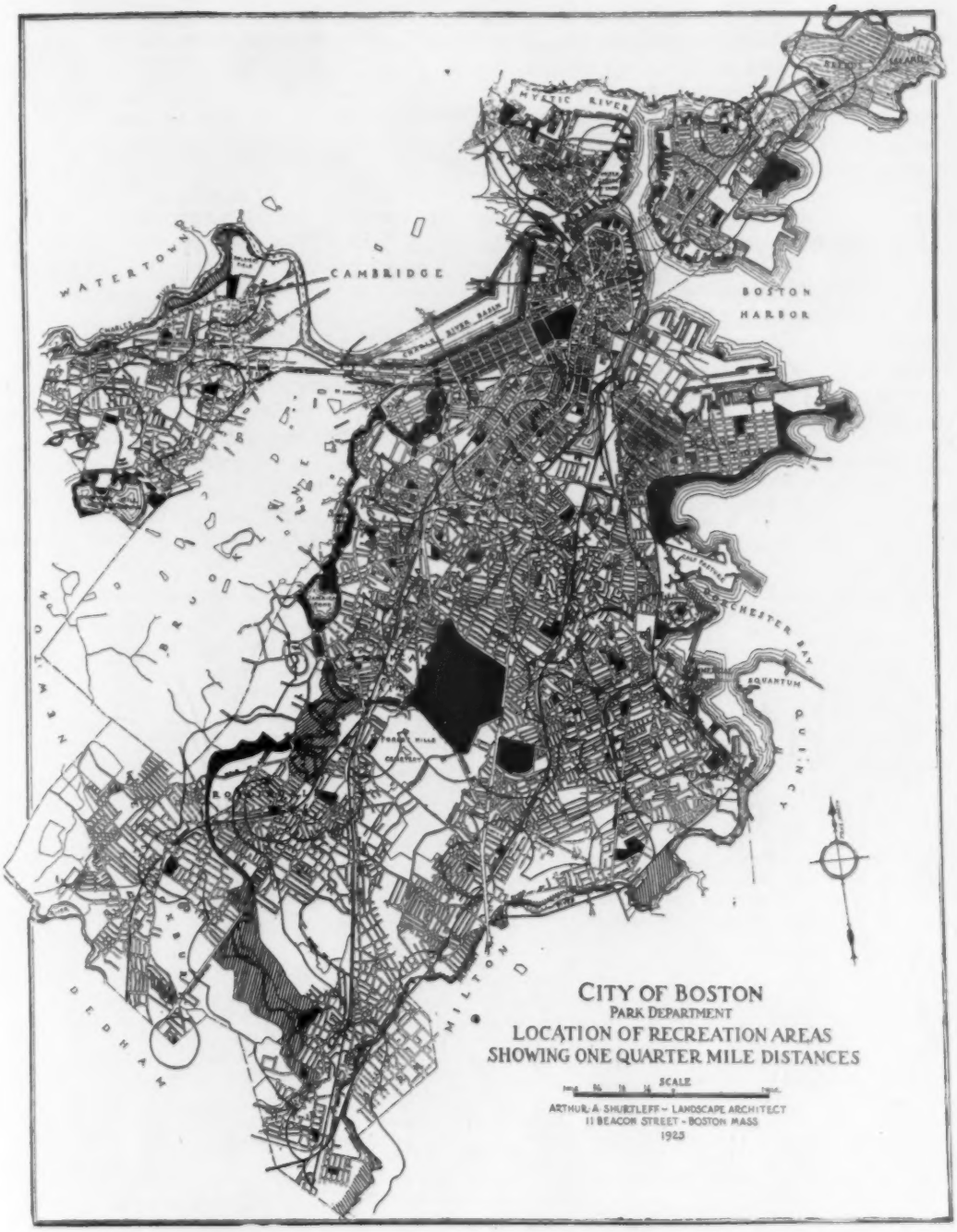
In the case of local parks and playgrounds, the region of use is limited by the distance to which children, mothers, nurses, boys and girls of school age, and elders, are willing or able to walk. The experience of Boston and most large cities shows that this limiting distance is about one-quarter of a mile. A greater distance usually keeps children at home or on the doorsteps, or in the streets. Consequently, the region of use of parks and playgrounds designed for local use may be indicated approximately by a line drawn around the recreation space at a distance of one-quarter of a mile, which will also represent the maximum local use distance of parks and playgrounds of long distance or general use.

The use of streets and sidewalks for play purposes has always been objectionable on account of danger to children. Recent increase in the number and the speed of vehicles makes such danger greater. Street play may involve collisions between rapidly moving automobiles which attempt to avoid children by sudden changes of speed or of direction. Automobiles sometimes mount the curbstones and endanger pedestrians on the sidewalk or persons seated on doorsteps, in order to escape children who are playing on the streets. Playgrounds have become essential to the safety of street traffic and to pedestrians using the sidewalks as well as to the children.

Desirable Size of Parks and Playgrounds

Ten per cent of a residence area, for example, the area of one of the quarter-mile distance-areas already mentioned, is commonly regarded as a reasonable space to devote to parks and playgrounds. This factor has been used as a guide in determining such areas in many cities of this country and Europe, and serves as a satisfactory general figure. To set aside very much more land for recreative use, means withdrawing a considerable area from tax-earning return. To set aside less, means withdrawing recreative opportunities from which other returns as valuable or more valuable than a yield in taxes accrue. An exact reckoning in this ten per cent field is, of course, impossible because a balance between a perfectly tangible area of land and a largely intangible return in health, morale, education,

automobiles in the United States. Today there are more than 20,000,000



and all the factors that outdoor recreation upon or near that land may contribute to social welfare, cannot be measured.

Fortunately, others than statisticians are taking part in the determination of the extent to which parks and playgrounds are to be provided. The public has become an active party in these decisions, and with fifty years of experience in making its wishes known. These wishes are clearly for more recreation space even where a theoretic allotment of ten per cent of area has been made.

Evidently, in the newly settled sections of the city, playgrounds and parks of larger average size than those provided a decade or more ago should be acquired. With greater acre-

age, better facilities can be provided for the smaller children, and also for older persons for whom pleasure grounds should be provided in the form of parks containing trees, shrubbery, and greensward, arranged in pleasant compositions. In such parks the ball games and other field sports of playgrounds should be prohibited. Such prohibition cannot be made as a practical matter, so great is the present demand for ball fields, unless the area of ground set aside for field sports is sufficiently generous to meet reasonable local needs.

A local playground of minimum desirable size to meet the needs of the neighborhood uses which have been discussed above should contain in round figures something like the following, but greater space would be desirable:

(a) Space for two full-size ball diamonds, which space can also be used for a regulation football field with room for a locker building and bleachers, about..... 3 acres

(b) Space for children's playground with trees, swing shelter, and play area large enough for basketball.. 1½ acres

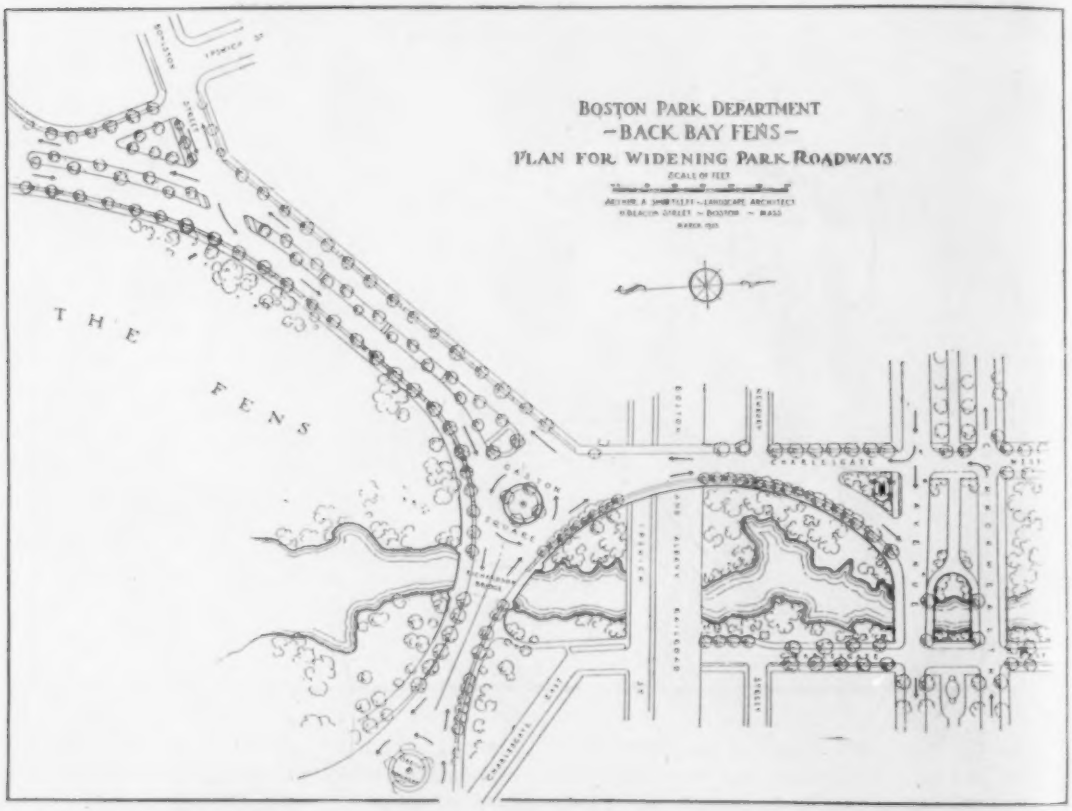
(c) Add to (a) or (b) space for two tennis courts in districts where patrons of the game are found, about ..... ½-acre

(d) Park space separated from the playground spaces, and containing trees, shrubbery, small lawns, footpaths, and space for many outdoor seats, about ..... 2 acres

Total ..... 7 acres

The Parkways of the Park System

Whether we relish it or not, the requirements of motor vehicle traffic are tending to cut down the landscape elements of the parkways by widenings, straightenings, and double-barreling of the roadways at the expense of ground which was considered essential for grass areas, trees, and shrubbery. Initial widenings and straightenings have become



PLAN FOR STRAIGHTENING AND WIDENING CURVING PARK ROADWAYS ON THE WEST SIDE OF THE BACK BAY FENS, BOSTON, AND FOR THE CREATION OF TRAFFIC CIRCLES AND DOUBLE-BARRELED ROADWAYS WITH INTERVENING GRASS SPACES FOR TREES

In discussing this expedient, Mr. Shurtleff says, in his report, that "such extensions can neither take the place of general highway improvements of the city, nor can they be recommended unless those highway improvements are assured"

necessary on account of the greater width and speed of motor vehicles more or less independently of the volume of traffic. Subsequent widenings will probably be required to accommodate volume. This volume will arise, not from a demand for park-approach facilities, but to secure road space, because the local highways of the city and the suburbs are so narrow and so poorly connected that they cannot be used for convenient through routes. . . . Evidently, however, there is danger that the more expensive local street improvement projects will be postponed until the development of the parkways for motor use is carried either to a point where all their width will be devoted to road surfaces for the accommodation of vehicles or to a point which will arouse public protest against the destruction of the grass spaces, shrubbery masses, and the trees which were regarded in the beginning as essential to the attractiveness of these ways. The temptation to allow the development of the roadways of the parkways to proceed too far will become very great as a matter of immediate relief and of instant economy, but sooner or later the city and the state will be forced to link together and to widen the highways which are responsible for a great part of this congestion, at least to a point where the destruction of the parkways as pleasure routes and as necessary adornments of the city can be stopped.

The What, Why, and How of Regional Planning

THE recently organized Regional Planning Federation of the Philadelphia Tri-State District, of which Samuel P. Wetherill, Jr., is President and Howard Strong, Director, has issued a most effective outline of its program for the metropolitan district in Pennsylvania, New Jersey, and Delaware, comprising the region within a radius of about 30 miles of Philadelphia. The statement is signed by about 100 of the influential citizens of the metropolitan area. The following quotations will be of interest, it is believed, to officials and organizations in other metropolitan districts throughout the United States.

What Is Regional Planning?

Haphazard growth is largely responsible for the confusion, inefficiency and discomfort of all large cities. City planning is the exercise of foresight, based on experience and scientifically determined facts, in providing for the orderly and systematic development of the community so that each improvement may be a logical part of a unified plan, suited to the increasingly varied demands of business and social life.

Regional planning disregards political boundaries and includes that larger adjoining territory economically and socially already a part of the central city. Regional planning is not a program for spending vast sums of money. It seeks to insure that money which is to be spent on necessary improvements shall be wisely spent and with the greatest return for the future as well as for the present.

The unplanned city is constantly tearing down or altering ill-conceived and inadequate facilities and rebuilding to meet larger requirements, only to repeat the operation again as these facilities prove insufficient. It is estimated that New York within the next few years will rebuild some $200,000,000 worth of public improvements, because the requirements of the future were disregarded at the time of their construction.

Why Should There Be a Citizens' Regional Planning Organization?

Within 30 miles of Philadelphia is an area of 2,000 square miles, in 3 states and broken up into 525 administrative units, if school authorities be included. The population of Philadelphia is rapidly spilling over into this reservoir. Each of these administrative units is seeking to meet the needs of the present and of the future, and is grappling with problems which are really a part of a single wide-spread regional problem, to be solved only by unified study and treatment.

The construction and improvement of highways will go steadily on. State, county and town highways must be considered as parts of a single system, if traffic is to be properly distributed and adequately served throughout the region.

Various towns are seeking new water-supplies. Shall competition and paralleling of lines be permitted, or will the solution of the problems be found through a single great territory adequately served by coordinated systems, as in New York and Boston?

Efficient sewage disposal is expensive and sometimes impossible for smaller communities. Economy, efficiency and health are served by the pooling of interests.

The preservation of our wonderful creek valleys, the provision of parks, playgrounds and recreation facilities over a wide area can be accomplished adequately only by joint action of several administrative authorities.

The increasing densities of population require that schools under different jurisdictions be located with definite relation to one another and to the changing school population.

Congested housing in one community is frequently due to increasing demand for industrial workers in near-by towns. Here is a common problem, to be solved only by joint action.

Problems of the port are essentially regional in character and can be attacked efficiently only by regional action. The long water-front offers opportunity for the development of unexcelled port facilities extending from Trenton to Wilmington.

Most of the physical and economic problems of each community in the metropolitan region are closely bound up with those of adjoining communities. There is no official machinery by which united action is possible. Voluntary organization, which may eventually give place to official action, is the only present logical means of cooperation.

Regional planning is a cooperative movement by which each community, in developing its own plans for the future, realizes an intercommunity relationship. This is not annexation, nor is it the imposition upon smaller towns of a plan conceived and dominated by a central city. Each community seeks a solution of its own problems as a part of a larger regional movement.

What Other Cities Are Undertaking a Similar Program?

Boston, by action of the Massachusetts Legislature, now has a Metropolitan Planning Commission, the outgrowth of a citizens' movement similar to that of Philadelphia.

New York during the past six years, has spent $125,000 annually, through a citizens' committee, in developing a plan for its metropolitan area of 5,000 square miles.

The Pittsburgh district, after five years of activity carried on by a group of public-spirited men, has completed its preliminary plan and is undertaking steps for its effective adoption.

Chicago has initiated an extensive movement for cooperative planning by officials and private agencies throughout a large adjoining area.

San Francisco is developing an organized movement on lines almost exactly like those undertaken in Philadelphia.

Los Angeles, Cleveland, Baltimore and most other large cities are initiating a similar regional program.

What Is Its Relation to Government Authorities?

The committee has received the hearty cooperation and encouragement of governors, mayors, commissioners, supervisors and other officials of the various jurisdictions of three states. There is no intention to replace or interfere with the work of any officials but rather to supplement their work, act as a medium for more definite cooperation, and secure more active and sincere citizen support for the work they are doing.

How Is the Committee Supported?

Support will be secured through contribution and memberships in a Regional Planning Federation by associations, corporations and individuals in the tri-state region; this support to be so distributed that a large area and representative groups will have a part and that the movement may not be controlled in the interest of any section or any single group. A substantial measure of support has already been pledged.

What Is the Committee's Program for the Immediate Future?

1. A comprehensive survey of the region, leading to a program based on studies by experts, of which the following are typical:
   - Traffic and transportation problems and needs
   - Highway and communication development
   - Industrial distribution, growth and future requirements to utilize exceptional natural advantages
   - Commercial needs, facilities and opportunities
   - Distribution, extent and possibilities of development of necessary public service facilities
   - Effect of various classes of improvements on real estate values
   - Park, playground and recreational facilities and demands
   - Water, sewer and housing provisions and needs for the promotion of public health
   - Population distribution and trend toward new population centers
   - Building construction, distribution and regulation
   - Legal authority of city and regional planning in Pennsylvania

   This survey, by a technical staff, has already been begun.

2. Stimulation of the appointment of county, city, town and borough planning commissions, and cooperation and assistance in making their planning effective.

3. Immediate action to secure the carrying forward of such projects as are at present clearly indicated, such for instance as the widening and extension of certain highways and the preservation of various creek valleys.

4. The ultimate preparation of a comprehensive and logical, but flexible plan, which may serve as a directive force in the future development of the Philadelphia Metropolitan Region.

Good Ventilation and How to Get It

IN a volume recently published under the title of "Fresh Air and Ventilation," Dr. C.-E. A. Winslow, Professor of Public Health in the Yale School of Medicine, presents in broad outline the modern conception of what constitutes good ventilation and tells how to get it under varying conditions. The revolutionary theory of the New York State Commission is that the temperature of the room is the most important factor in hygienic ventilation. Good ventilation, he says, can be secured by the following measures:

A. Place a thermometer in every room, schoolroom, office, and workroom and note the temperature systematically.

B. If the temperature is found to exceed 68 degrees, moderate the heat.

C. If overheating continues, introduce fresh air by adjustment of windows, etc.

D. In larger offices, schools, factory workrooms, etc., provide a system of window-inlets and gravity exhausts.

E. In schools situated so that dirt, smells, noise, etc., make window opening impossible, lay common sense must give way to expert knowledge and mechanical ventilation must be supplied by the ventilating engineer.

Athletic Facilities to Meet Modern Needs in Towns and Cities

By Gavin Hadden, C. E.

THOUGHTFUL modern educators of youth have long recognized that education attains its most permanent value only when it is imparted with the full consent and willing cooperation of those who are to be educated. The students must obtain their education *themselves*, and therefore these educators concentrate their efforts primarily on methods of instruction which will arouse the interest and willing cooperation of their pupils. With this end attained, successful self-education should inevitably follow.

These policies and methods are applied in our schools to-day with marked success in the presentation not only of the intellectual education but also of the physical education of the students. Physical education is now no longer a matter of routine drudgery. It has become real recreation and enjoyment. Calisthenics and other monotonous exercises have been displaced by the familiar swings and slides of the modern playground and by competitive athletic games. With the interest and enthusiasm of the pupils aroused, voluntary participation in healthful and beneficial exercise continues and spreads.

Such new developments, which are in large measure of comparatively recent origin, have naturally produced important effects upon the facilities provided for physical education. From the simple activities of the kindergarten child to the more highly organized competitive athletics of the high school and college student, the exercise in each case requires standardized facilities. The simple school yard and the open playground alone are no longer adequate. The increasing interest has demanded improved facilities, and where these have been provided, the benefits have multiplied.

Alert communities have fortunately been alive to these developments, and their city and county officials, their park and city planning commissions, their school boards, and their various civic organizations, as well as athletic directors and public-spirited citizens as individuals, have actively striven to improve and increase the physical education and recreation facilities available. Further impetus has also been given to these efforts through the demand for athletic facilities for the grown citizens of the community—the office workers, the factory workers, the professional men, and all others who have come to recognize the value of enjoyable athletic games to the working man.

The Problem of a Place to Play In

To provide in suitable and convenient locations the requisite number of recreational facilities, has not usually been an easy matter, and those communities which have delayed their programs for new work, as well as those which have not planned with sufficient foresight, are having increasing obstacles to overcome. All modern growing communities have become accustomed to the difficulties of contending with a scarcity of open land suitable for extension and development of their activities, and in outdoor activities these difficulties are far more serious than in those which can be housed indoors. Intensive development of the land for public building purposes to a reasonable extent can be readily accomplished by building upward in a vertical direction, but for outdoor purposes, and for outdoor athletic purposes in particular, extensive areas of level ground in single units are absolutely necessary, and no doubling of utility by upward extension is possible. The single ground surface must suffice.

Under these circumstances it is only natural that those in charge of planning new facilities should devote every attention to securing the most efficient results—those which will provide the greatest number of satisfactory facilities without interference and with the least waste of space. Experience has shown that careful and intelligent replanning may result in a saving of as much as ten to twenty-five per cent of the total ground area devoted to a given number of facilities, or a corresponding increase in the number of facilities on a given area, and it is obvious that where land is valuable such a saving makes a large amount of study in design well worth while.

The planning of the ordinary playground for smaller children does not present the most serious difficulties in design. The apparatus which is found to be most useful in these developments—the swings, slides, trapezes, flying rings, etc.—can be readily procured in units

of various sizes, both large and small, and satisfactory and efficient arrangements can readily be found, even on areas of varying levels.

The planning of athletic facilities, however, —football gridirons, baseball diamonds, running-tracks, golf courses, swimming pools, tennis courts, basketball courts, soccer fields, lacrosse fields, etc.,—is another matter. Many of these activities require very extensive areas of level ground in single units, and to find the most efficient layout for a given area often taxes the designer's ingenuity severely. All these facilities are governed directly by the fixed rules of the games for which they are used. They must conform to definite recognized standards, and any departure from these standards must inevitably render them less efficient and less desirable.

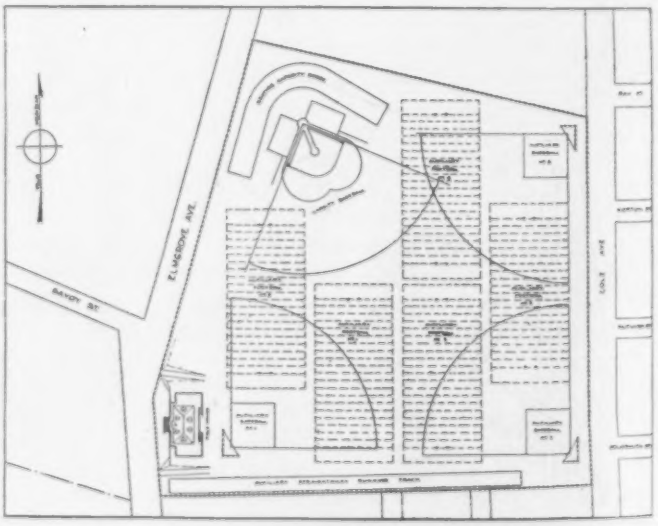
College Standards as Models for Municipalities

Most of these games have attained their highest development in the colleges and universities, and the standards adopted for the college facilities may therefore be taken as the best models for the facilities of towns and cities. Even the game of baseball, it is claimed, has reached its modern state of development primarily through the efforts of its exponents in the colleges. Furthermore, until very recent years, it was only at a few colleges and universities that really extensive athletic fields could be found, and to-day these institutions as a class are naturally still far in the lead in the area and number of facilities which they provide.

The illustrations accompanying this article include three plans showing examples of general athletic fields which the writer has designed for various universities: Brown University in Providence, R. I.; Cornell University in Ithaca, N. Y.; and Bucknell University in Lewisburg, Pa. All projects of this kind must, of course, differ widely in design, not only on account of differences in the shapes of the areas enclosed by the property lines, but also on account of differences in the local topography, drainage conditions, wishes of the owners regarding the facilities required, and methods of use, etc. Each of the plans shown indicates typical features which have been of value as guides in influencing the design of other community facilities.

Field Primarily for Football and Baseball

The design of Aldrich Field, at Brown University, which was constructed in 1924-25, shows that it was desired to confine the facilities provided on this field primarily to football and baseball, with the addition of an auxiliary 220 yards straightaway running-track at the south side of the field. In the northwest corner is shown a baseball stand for viewing the major games of baseball on the most important diamond; 6,000 seats of this permanent stand were completed last year. The major football and track games are provided for in a permanent stadium which has been erected on a neighboring plot of ground not shown on the plan. The site of this field, which is a little over 15 acres in area, was originally what might be called a "wooded swamp," with its general level several feet below the grade of the adjoining streets. The construction problem here was primarily one of clearing, grubbing, and drainage, with comparatively little grading necessary. Particular attention is invited to the arrangement of the gridirons and diamonds. No gridiron encroaches anywhere on any part of the infield of any diamond, thus simplifying greatly the problems of maintenance. The arrangement shown also provides great flexibility in use: all four diamonds may be used simultaneously; or, all five gridirons may be used simultaneously; or, some of the diamonds and some of the gridirons may be used simultaneously.

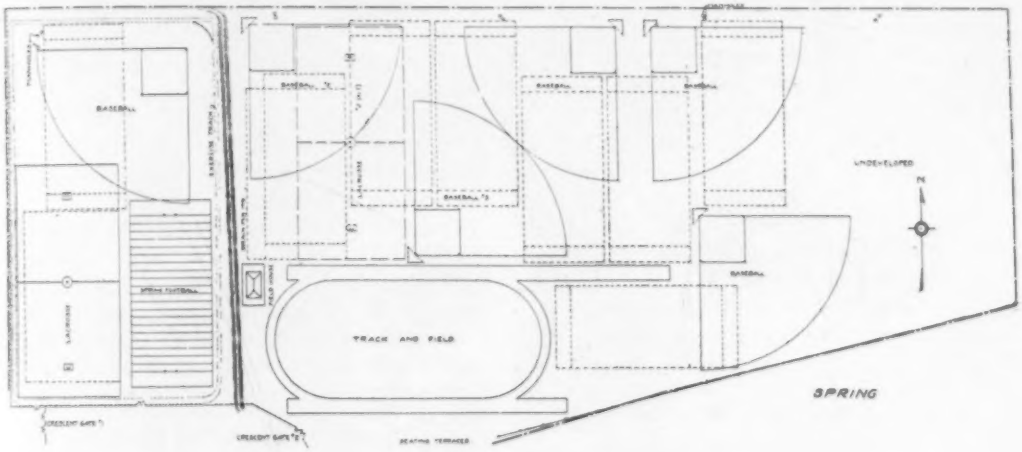


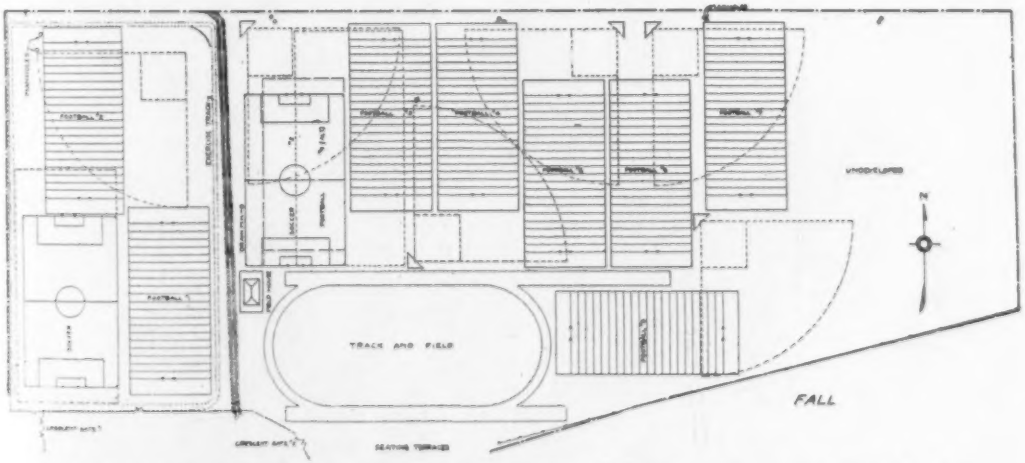
PLAN OF ALDRICH FIELD, BROWN UNIVERSITY, PROVIDENCE, RHODE ISLAND

An auxiliary straightaway running-track such as that shown in this design is a particularly useful feature in any development which is to be used intensively for track purposes. It can be used for the practice of starts, sprints, and hurdles at the same time that the regular quarter-mile track (with its straightaway integrally attached, as in the usual case) is being used for long-distance racing practice and running exercise, without any interference.

Advantages of the "Hooded" Type of Baseball Back-Stop

The type of back-stops installed for the auxiliary baseball diamonds is perhaps also an interesting feature. These diamonds have been designed for the "hooded" type of back-stop, which is coming more and more into use on all but important baseball fields. This back-stop is erected in two vertical wings forming a right angle a short distance behind the home plate, with a horizontal triangular hood of wire fabric supported above. The hood extends over the home plate, and although this prevents all put-outs by the catcher on foul flies behind the plate, it has several useful advantages which more than outweigh this disadvantage except for important match games. The hooded back-stop not only conserves valuable space and allows adjacent diamonds and other fields to be used simultaneously without interference, but it also prevents large numbers of foul balls from passing over the property line fences. Where buildings are located close by, and where public highways with vehicular and pedestrian traffic are close at hand, as often occurs in towns and cities, this becomes a very valuable consideration. The possibilities of





PLAN FOR FUTURE DEVELOPMENT OF CORNELL UNIVERSITY ALUMNI FIELD, ITHACA, N. Y.

Spring facilities provided: six baseball diamonds; one football field; one track and field; one lacrosse field and one alternate; one exercise track

Fall facilities provided: eight football fields and one alternate; one track and field; two soccer fields; one exercise track

minor accidents and damages are minimized.

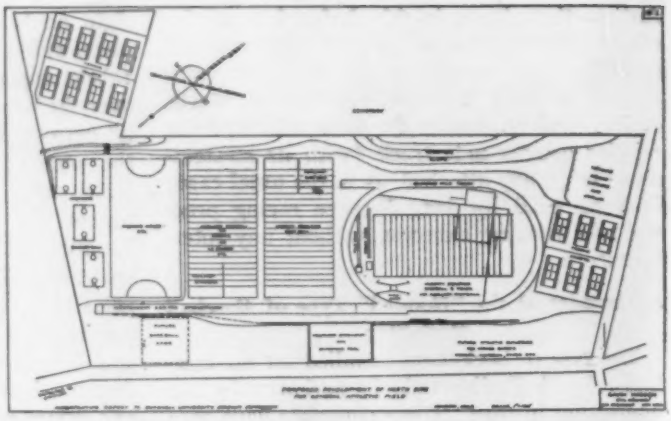
Flexible Planning for Seasonal Games

The general athletic field at Cornell, shown in plan in another illustration, is a development of a somewhat different nature. It is considerably larger, covering in its entire developed area about 28 acres. The plan is divided into two parts by the topography of the site. The natural ground slopes made it originally advisable to construct the field on two different levels with a bank between, as indicated. This entire field has been designed for minor games and practice purposes only; the major facilities for football, track and field, and baseball, as well as the tennis courts, the locker-rooms, etc., are all located on neighboring property. The plan is shown in duplicate, in order to indicate clearly the facilities available during the spring playing season in one case and those available during the fall playing season in the other case. The same general division of seasons may be made for municipal facilities also, although for these the spring season may usually be extended through the summer. The very small amount of ground unused, the great flexibility and variety of the facilities provided, and the manner in which the infields of all the baseball diamonds have been cleared by other facilities, should be particularly noted. The "hooded" back-stops on the minor baseball diamonds are again in evidence.

In a case of this kind it is of course possible to arrange an almost infinite number of alternate methods of use. That indicated on the plans seemed most suitable to the particular requirements of the University in so far as they could be predicted.

The plan of the general athletic field for Bucknell University, reproduced in another illustration, shows a development of a somewhat different nature. The irregularity in the shape and contour of the site is clearly indicated. The property, already quite narrow, had been still further restricted in width by a retaining wall built on one bank of a brook which flows the length of the plot. The narrow strip between this wall and the road was reserved, therefore, for future athletic buildings.

Here again the major games are located elsewhere. In order to provide the desired number of baseball diamonds and football gridirons, together with the other facilities demanded, it was necessary to locate both football and baseball within the running-track enclosure, instead of reserving this area entirely for field events, as at Cornell. It was also impossible to prevent encroachment of other facilities on the diamond infields.



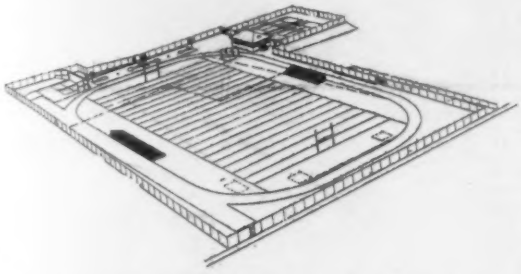
PLAN OF GENERAL ATHLETIC FIELD, BUCKNELL UNIVERSITY, LEWISBURG, PA.

Another special requirement here was the provision of facilities for women students, for whom one end of the property is entirely reserved. In this respect, this design is perhaps somewhat more analogous to some municipal and school developments, where provision must be made for both boys and girls.

Facilities Provided on 3½ Acres

Turning now from the university and college developments, it may be of interest to examine some of the fields for schools in smaller towns, on which the facilities are modeled after those already described. Of these, a particularly interesting example is shown in the next illustration, which is a perspective drawing of a memorial athletic field at Malone, N. Y. This field, with its field house, was presented to the town by public-spirited citizens for the use of the boys and girls of the school. The site available, irregular in shape and contour, covered less than 3½ acres of ground, and yet it was possible to provide all the facilities shown, without undue interference. These facilities include a football field and a baseball field for alternate use, a running-track, pits, etc., for field events, two tennis courts, two outdoor handball courts, two outdoor basketball courts (principally for girls, with whom this game is very popular during the outdoor season), and a field house or locker

building with a director's office and with lockers, showers, etc., for boys on one side, and for girls, completely separated, on the other. The comparatively small seating stands shown in the drawing are of a portable type, capable of being shifted about for the different games and stored in the Field House during the winter. It should be noted that the running-track here is 1/5 of a mile long with a 120-yard straightaway, and while this size of track is not so useful as the larger size customarily installed wherever possible, for the conditions which governed this project it was considered fully justified.



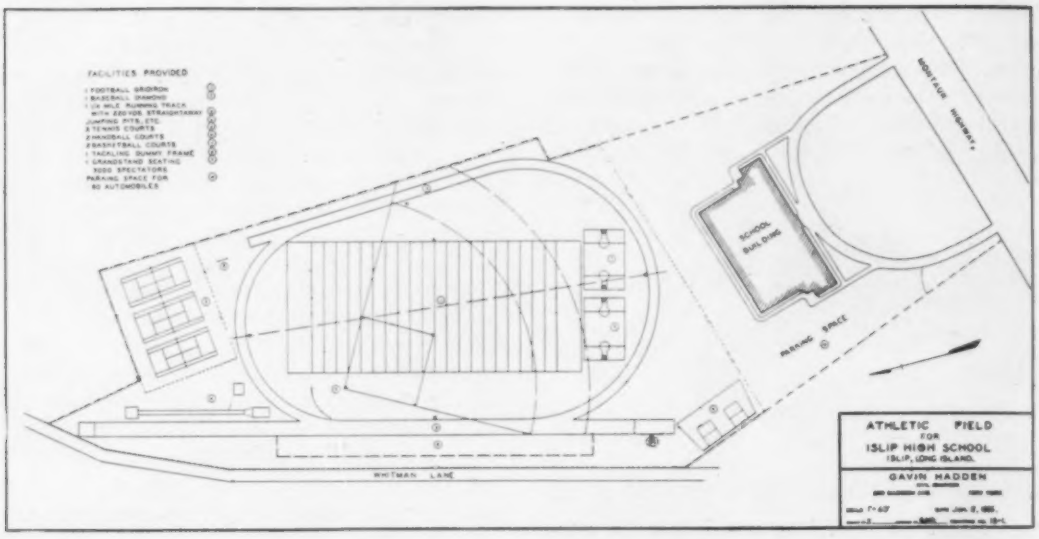
MEMORIAL ATHLETIC FIELD, MALONE, N. Y.

Although the field house, or locker building, the exterior of which is shown in another illustration, is a comparatively small building, it presented a particularly interesting problem in design, on account of the special conditions which governed it and because the donors wished it to be particularly efficient and suitable in every detail. The brick used in the exterior walls was salvaged from a building formerly on the site, and the well-weathered stone, the front porch columns, and some other lumber inside, were salvaged from another building. By carrying the masonry walls up to the window-sills, and by providing a wide overhang for the Spanish tile roof, the apparent height was perhaps somewhat reduced, thereby tending to prevent the building from dominating the surrounding athletic field, which should, of course, hold the observer's primary attention. This requirement is almost invariably encountered in field-house design. Inside, the facilities were carefully proportioned to the anticipated conditions of use, and the partitioned divisions include locker-rooms, shower-rooms, toweling-rooms, toilet-rooms, and girls' dressing-cubicles.

Intensive Development of a High School Field

The athletic field for the Islip High School, shown in plan in the next illustration, shows another intensive development on a very irregular site. Here, by widening one end of the track enclosure it is possible to include a full quarter-mile running-track within the oddly restricting boundaries, together with a full 220-yard straightaway at one side. This plan shows in dashed lines a location reserved for a future permanent grandstand, from which a good view of all the major games may be obtained. This design is believed to be an unusually interesting example of space conservation under difficult conditions.

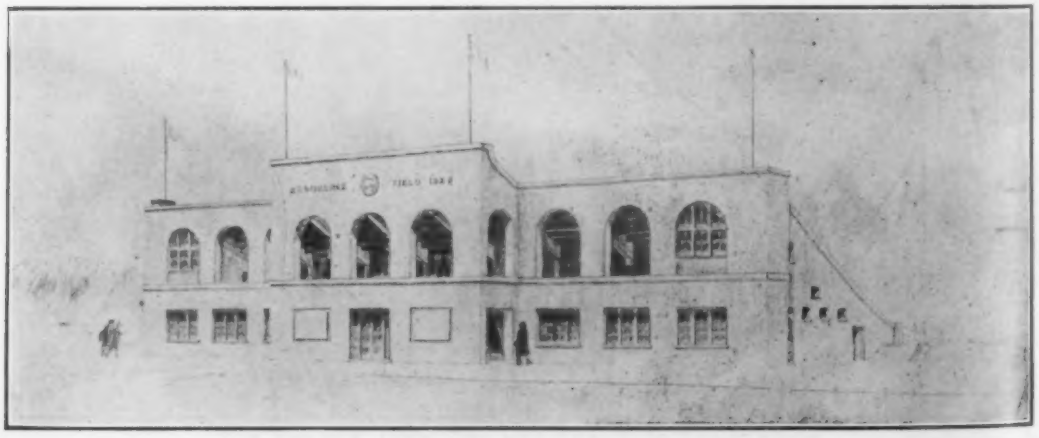
FIELD HOUSE, MEMORIAL ATHLETIC FIELD, MALONE, N. Y.



ATHLETIC FIELD, ISLIP HIGH SCHOOL, ISLIP, N. Y.

Combined Field House and Grandstand for a Town Athletic Field

For larger municipal athletic developments the grandstand assumes relatively greater importance, and just as in the case of college and university structures, it is often efficient and economical to combine two proposed structures by locating useful interior facilities under the decks of the seating structures. The next illustration shows in a perspective drawing a combined field house and grandstand for the Park Commissioners of the town of Brookline, Mass. On the ground floor there are ample locker and shower facilities, etc., in one suite for home team players and in another separate suite for visiting team players. A mezzanine floor, between the seat deck and the ground, is used for spectators' circulation passages and conveniences. The desirable complete separation of spectators and players is simplified by the outward extension of the central part of the seat deck, which covers two wide stairways leading to the mezzanine. This central extension, centered on the center line of the football field, also serves to increase the value of the seats for football spectators, following a principle which the writer has applied in various ways in the design of a number of larger college and municipal structures. By accentuating both the center line of the structure and the center line of the field, it likewise serves to increase the unity of the design as a whole, and thus improve its architectural appearance.



GRANDSTAND-FIELD HOUSE FOR BROOKLINE, MASS.

Important Considerations in Municipal Stadium Design

One municipal stadium design of a moderate size may serve as an example of the larger athletic developments which are being projected and constructed in the larger municipalities. The illustration shows a perspective drawing of a stadium design for the city of Portland, Me. The danger in some of these developments is that their proponents will lay too much emphasis on the construction of facilities for spectators and lose sight of the perhaps greater importance of providing adequate facilities for players. It is always well to prevent any over-emphasis of this kind and to remember the real fundamental purpose of these projects as a whole. At the same time, interest in playing will beget interest in viewing, and vice versa; therefore, in fostering the former interest, the provision of suitable facilities for spectators becomes an almost inseparable part of the provision of suitable facilities for players.

In the project illustrated, the site under consideration was fortunately large enough to allow useful auxiliary playing fields to be provided for outside the stadium arena, and the arena itself is designed with great care to provide, as efficiently as possible, for all three of the major outdoor land games—football, baseball, and track and field. This arena design combines the three games with a minimum amount of overlapping of baseball and football fields, and a consequent reduction of maintenance trouble: of the five major points of wear on the baseball diamond (home plate, pitcher's box, first, second, and third base) only one, second base, must be located on the gridiron between goal lines. The seats are also so placed as to include in general the most desirable locations for viewing all the games, with the great majority most advantageously located for football, which is the most popular in Portland.

By the same principle of design previously referred to, the seating-decks are extended outward, in this case in a series of rectangles in plan, each centered on the center line of the field. The outer sides of these rectangles approximate in plan the desirable circular boundaries of the deck and have the further advantage of providing for a program of further construction by increments of suitable size, which was an important consideration in developing this design.

MUNICIPAL STADIUM FOR PORTLAND, MAINE

Just as in the case of athletic fields, the stadium structures for municipalities, both large and small, are properly similar to those of colleges and universities, the primary purposes and uses being similar in the two kinds of communities. Care must be exercised in each individual design, however, as always, to give due consideration to all influencing conditions. Even those special stadium uses which are not commonly included among athletic uses are quite similar in institutional structures and in municipal structures, except that in the latter they usually tend to attain greater importance. Municipal stadia and their arenas may be used for athletic contests and also as a whole or in part for concerts, fêtes, pageants, carnivals, mass meetings, community singing, shows, military tournaments, and all outdoor mass events by day or night. The concentration of large numbers of seats in one place, as brought about by following

the principle of design previously indicated, improves the utility of the structures for these other purposes also very materially; it is possible to provide for large audiences even if the events require only a small stage or arena, and modern amplifying and broadcasting systems have greatly simplified the problems of sound transmission.

It would seem to be well for many cities and towns to survey and improve the recreational physical education facilities they possess, no matter whether they are large or small, whether their needs include only small athletic fields or large athletic field and stadium developments—and the fields themselves must be the primary consideration.

Chicago Votes $19,070,000 in Bonds

BY overwhelming majorities the voters of Chicago, on April 13, approved sixteen propositions for the issuance of bonds aggregating $19,070,000 as follows:

Propositions	Purposes	Amounts
1-11	To cover the city's share of the expense involved in opening, widening, and improving certain streets designed to facilitate the movement of traffic and promote the general development of the city	$12,545,000
12	Preparing of bridge plans and construction of bridges	2,500,000
13	Extension and rehabilitation of the street-lighting system	2,000,000
14	Purchase of sites and construction and rehabilitation of fire-stations, and for the purchase of fire-boats	1,475,000
15	Purchase of sites and construction of district yards and buildings thereon for the Bureau of Streets	800,000
16	Construction and installation of traffic control signal lights	250,000
	Total	$19,070,000

Zoological Park Act Also Approved

At the same election the voters of Cook County (including Chicago) approved the zoological park act which, as explained in a pamphlet issued by the Chicago Bureau of Public Efficiency, authorizes the Commissioners of the Forest Preserve District to contract with a zoological society for the erection, operation, and maintenance of a zoological park and the collection and display of animals within the forest preserve, out of the tax provided in the act. The act also authorizes a special annual tax of three cents per $100 assessed value for the next three years, and a tax of one cent per $100 annually thereafter. These rates will produce about $600,000 and $200,000, respectively, per year.

In pursuance of this authority, and subject to the approval of the act by the voters, the Commissioners entered into a contract with the Chicago Zoological Society for the construction and operation of a zoological park on a tract of land comprising about 172 acres, situated west of the Desplaines River and south of 31st Street in Riverside. A part of this tract was donated by Mrs. Edith Rockefeller McCormick, and the remainder has been, or will be, purchased by the Commissioners.

The contract provides for the construction, equipment, upkeep, and operation of the park and zoo by the Society, the cost thereof to be borne by the District. The Society, however, undertakes to carry out the project without profit to itself, or compensation to any of its officers or governing members, and it agrees to use whatever funds it may receive from membership fees, donations, or other sources, for the development and improvement of the park and the collection of animals to be displayed therein.

Citizens' Committee to Act with New Municipal Emergency Board

ANNOUNCEMENT for the organization and program for carrying out the policy that has been developed for dealing with emergencies in the city of Boston was recently made by Mayor Malcolm E. Nichols. This program of work, as outlined in the *Boston City Record*, embraces almost every form of disaster that could conceivably strike the city, and will function through the newly appointed official Board of Municipal Emergencies, under the chairmanship of Building Commissioner Rourke, in cooperation with a Citizens' Committee on Municipal Emergencies, for which fifty leading professional and business men have been called into service. The two bodies will be combined under one head, the Mayor, as Chairman General.

The work of the official Board will be divided into two sections—a division of action directed by Commissioner Rourke and a division of education under Doctor Hollis Godfrey, President of the Engineering-Economics Foundation.

The Citizens' Committee will aim to function as a point of contact between the official Board and those the latter body should reach and help.

To the education division of the Board will fall the duty of compiling knowledge of the danger in emergencies and of the means of protection, for the use of the division of action and for transmission to the executive officers of the city. To assist in this work, the Engineering-Economics Foundation will study Boston continuously from the standpoint of the effects various emergencies have upon the city's people and upon the buildings. The responsibility of putting this knowledge to work will rest with the division of action, which will proceed to develop methods of organizing the goods and services of the city and strengthening the structures of the city so as to obtain maximum protection against destruction in advance of emergency and to provide all possible means of cure if disaster comes.

Public lectures, radio, motion pictures, and the newspapers will be invoked to tell every man and woman in the city what they can do to protect themselves against or in any emergency or disaster that may strike Boston.

THE ESPLANADE GARDENS AT GOSPORT, ENGLAND

Water-Front Improvements and Water Sports in an English Borough

By E. J. Goodacre

Borough Engineer and Surveyor, Gosport, England

Esplanade Gardens

THE Esplanade Gardens of Gosport are of formal design, through which is a boulevard connecting the High Street to the Floating Pontoon. The paths are constructed of concrete reinforced with steel fabric, the concrete being tinted red to prevent sun-glare. The expansion joints are filled with bitumin sheeting. New sanitary conveniences for men and women are built on the side of the Gardens, which are enclosed by reinforced concrete balustrade walling. The scheme enabled the formation of a "place" at the end of the High Street for the accommodation of bus and tram traffic. It is interesting to note that the Gardens are laid out on land that has been reclaimed.

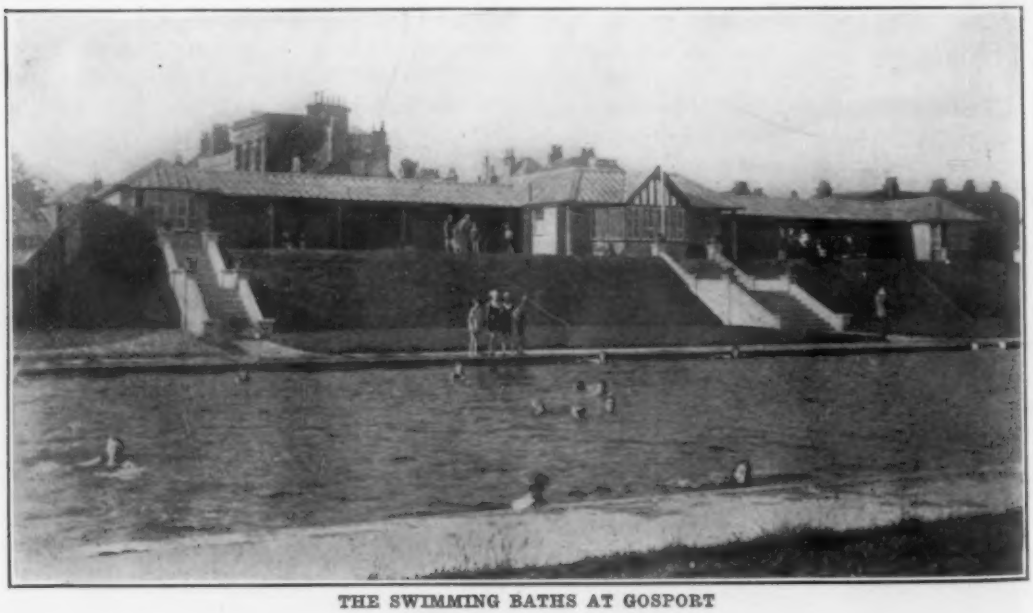
Walpole Park, Model Yacht Lake, and Baths

This open area, of an acreage of 18 acres, was originally a barren piece of land in the heart of the town, belonging to the Crown. The Town Council obtained a lease for this land and has now completed a scheme which comprises the Walpole Gardens, Walpole Park for cricket and other sports, a canoe lake for children, and a model yacht lake, upon which model yacht international races have been held for the past three summers.

The open-air swimming bath is constructed on the site of an old moat, and is 220 feet long, 50 feet wide, 7 feet deep at one end, and 3 feet at the other, the walls and floors being of concrete reinforced with expanded metal. The difficulty experienced, owing to a considerable depth of mud under the bath floor, was overcome by the reinforcement and the insertion of reflux valves in the bottom of the bath. The dressing-room accommodation includes cubicles for male and female, common rooms for children of both sexes, waiting-room, shower-baths, etc.

In view of the fact that this bath would be used only during the summer months, the author

suggested the introduction of sixteen slipper baths, eight for males and eight for females. This the Town Council decided to do. The ticket office accommodation waiting-room and attendants' room will therefore be used the whole of the year. The heating arrangement for the slipper baths is interesting. It was only after careful consideration and visits to other towns that the present system was adopted. The problem to be met was the elasticity necessary to meet fluctuating demands of bathers throughout the day The installation consists of a 600-gallon hot-water tank and ten gas-heated boilers, fitted with thermostatic controls, by which means the water on attaining a predetermined temperature automatically operates the gas supplies to the boilers, reducing or increasing the amount of gas as required. The boilers are arranged in two batteries, and by means of suitable connections to the hot-water tank quantities of 120, 250, 400, and 600 gallons, respectively, of hot water can be obtained, in accordance with the demands made upon the use of the baths. The installa-



THE SWIMMING BATHS AT GOSPORT

tion will provide more than 10,000 gallons of hot water per day, which amount is capable of regularly supplying well over 500 hot slipper baths in the same period.

The buildings are erected on a skeleton of second-hand army roof principals filled in with concrete blocks and covered with red "Roman" asbestos tiles. These tiles give verticality to a rather "squat" building. The total cost of the scheme was approximately £7,000. The whole of the work was carried out as an unemployment relief scheme.

Tax Maps, Record Cards, and Land-Value Maps*

Two Essentials for the Scientific Assessment of Real Estate

By Campbell Scott

President, Technical Advisory Corporation, New York

IN the thoughtful attention which a large number of municipalities are giving to a revision of their assessment methods, the importance of modern methods of recording the data is securing increasing recognition.

The development of a scientific system of assessment is impossible excepting on the basis of a detailed and complete tax map of the entire municipal area. This will usually be on a fairly liberal scale, preferably 50 feet to the inch, so that the map consists of a large number of uniform-sized sheets bound in a book with an index sheet. It will show every public way and property boundary line. It is best that it show all buildings in outline, but this is not always essential and some tax maps merely show whether a particular property is or is not improved with buildings. The map should be prepared on tracing cloth, so that blue-print copies may be available for the use of all city departments and even of real estate interests and others who may wish them, who should pay the cost of reproduction. A reduced scale may be used for sheets which include large undeveloped areas. Whenever a new subdivision plat is recorded, the tax map should be properly corrected. It is not necessary to give bearings, and in many cases not even distances, on property boundary lines; but the map should be drawn to scale so accurately that areas can be taken off at any time.

Whenever a transfer of property takes place, involving a change in boundaries of parcels, the information should be incorporated on the tax map. Hence it is essential that the assessors keep in constant touch with the office where transfers are recorded. This process becomes automatic if a certain day in each week or a certain hour in each day, according to the size of the city, is assigned for inspection of the records made since the previous inspection.

A rather startling statement may be made. It is that wherever complete tax maps have been prepared in a community which had been without them, numerous examples of error and omission in the assessment of properties have been found. It is frequently, perhaps always, the case that certain properties or strips have escaped taxation indefinitely. In other cases the areas of tracts have been underestimated and assessments are consequently disproportionately low. As a part of the process of making a set of tax maps, the area of every parcel should be computed with reasonable accuracy, whether the assessment depends directly on the area or not.

Record Cards

Practically all cities which have inaugurated any recent revision of assessment methods have adopted a card system for recording each property. Some of the cards are extremely extensive and elaborate and call for the noting of a great many items. Some cards provide for as many as 45 entries relating to the mere identification of the property and the characterization of the land, to say nothing of particulars about buildings and their values. Sometimes the cards call for repeating particular entries. For example, in one city which is supposed to have a particularly modern and effective assessment system the land area must be written down, or typed in, three times.

A great deal of such complication and elaboration of record cards is futile. Aside from those obvious entries necessary for identification, there are really only seven things needed

* Copyright, 1926, Technical Advisory Corporation.

in connection with the land part of the record.* They are: (a, b) a sketch of the property, unless it is rectangular, in which case two figures will answer; (c) a statement of its ground area and frontage; (d) the unit land value per front foot or per square foot; and (e) the resulting lot land value; to which should be added (f) reference to the volume and page of the book of deeds in which the property was last described; and (g) a statement of the sale price, which may have to be estimated approximately from the stamps affixed to the transfer.

Two comments may be made at this point: If the tax map contains sketches of the buildings, then no sketch is necessary on the record card. Since both documents are under the same custody, it is foolish to repeat these sketches, which are rather expensive. It is believed that the best place for them is on the tax maps. The general form of the sketch and the amount of detail should be about in line with what is given on the best insurance atlas maps, except that color tints should be avoided. The commercial atlas maps should not be used for other than checking purposes: first, because they sometimes contain errors; and second, because they are never up to date.

It may also be desirable to have a special small card form for taking off data from books of deeds. This may save work in the county record office. As soon as the information has been transferred from these special cards to the tax office record cards, the former cease to be live documents.

It is certainly not necessary to give (as some record cards do give) ward and precinct numbers, or consecutive numbering to the record cards themselves, or an elaborate record of the owners of abutting properties, or purely intermediate figures like the ratio which the depth of the lot bears to some standard depth.

There are, however, some optional items of information which, under certain circumstances, may be found desirable; such as, for example, a record of any mortgages, or a statement of the last date of sale or transfer (neither is, as a rule, much used), or brief entries (made by check marks only) to show whether the property enjoys the usual public improvements, such as pavement, sidewalk, curb, gutter, and supplies of water, gas, sewerage, and electricity.

* The obvious entries include, of course, the date, name, and address of the owner of the property, reference to the tax map, and identification of location: first, by giving the number or designation of the plat, parcel, subdivision, or quarter (in some western cities the range and section); then the block number and lot number, street and house number, and sometimes the side of the street stated with respect to the compass.

The size of the index cards varies in different cities from a usual minimum of 5 by 8 inches both sides of which are used, up to 8½ by 11 inches, with one side only used. All of the information really necessary or useful, excepting only for a possible sketch, can easily be placed on a 5 by 8 card. Opinions differ as to whether a larger card is easier to handle and less fussy to work with. In the case of any ordinary building on a small lot, room can be made for a sketch (if necessary) without utilizing both sides even of a card as small as 5 by 8 inches.

Land-Value Map

Values of land should, above all things, be consistent; and consistency is not possible except as a result of visualizing all values at once. The most effective way toward such visualization is by preparing a unit land-value map. This is one map of the entire municipality showing streets and property boundary lines. The scale will be somewhere between 200 and 600 feet to the inch, depending largely on the magnitude of the municipal area and on the regularity and dimensions of the lots. In the city of Wilmington, Del., which has a rather small area for its population, there are many lots only about 10 feet wide, and it was a matter of some difficulty to show all property lines distinctly even at a scale of 300 feet to the inch. A 200-foot scale map is liberal enough for almost any condition. A 400-foot scale map will answer in the average case.

It is convenient for purposes of computation first to prepare a map of actual assessments proposed on land; but these should be reduced to a square-foot or front-foot basis for incorporation on the unit land-value map. This second map becomes the subject for detailed study.

In general, unit land values will plot into quite smooth profiles or curves if they have been fairly determined. Near the business center of a city the profiles will have a pretty well-defined flattened peak which, as is well known, may be higher for one side of the main street than for the other side. In cities without building-zone ordinances or where the restrictions on heights of building are liberal, the land-value profile will rise sharply to a steeply pointed peak. In fact, the general shape of that profile will be much the same as the shape of the skyline of the city.

There is a large amount of available information from various cities as to normal land values and particularly as to the effect of the population of the city on ranges of value and

on resulting economic types of buildings. There have been tabulated, in fact, for various front-foot land values the economic types of construction which are practicable. There are also available figures on average frontage values of the best business and best residential property in cities of various populations. There are also tabulated the economic ranges of building costs per cubic foot and the resulting necessary type of construction and desirable height of building for land of various frontage values. When plotted against population, land values of any particular type (use classification) form lineal logarithmic functions. Facts like these permit of a considerable amount of rationalization and comparison of tentative land values set. Of course, the comparisons are of auxiliary value only and are not determining, but experience has shown them to be often useful. They may need to be supplemented in any particular city by other auxiliary but quantitative and local information, such as determining the relationship between front-foot values of business property and volume of pedestrian traffic.

Finally, the profiles and basic values developed should be made the subject of critical study and repeated conference with local business interests, including, by all means, the real estate interests. Before any particular property is actually assessed, the base values of the land map should be generally accepted by those concerned. After this point has been reached, the remaining process of assessing a particular parcel often becomes almost mechanical.

In some cities the facts of the unit land-value map are made public, not necessarily by reproducing the map, but often by tabulating values for the various streets, alphabetically arranged. As a substitute for, or perhaps a supplement to, this, a publication of final assessments on the Middletown, N. Y., plan is advocated. The unit land-value map should, of course, be given the widest possible publicity during its formative period, and any citizen interested in it should be invited to examine it and encouraged to make suggestions.

"The Restraints on Men as Well as Their Liberties Are to Be Reckoned Among Their Rights"

THAT quotation from Edmund Burke was taken as a text by Federal Judge James H. Wilkerson of Chicago in a recent address before the Allen County (Indiana) Bar Association, and was effectively applied to the zoning principle in a report of the speech by R. B. Hanna in the *Fort Wayne News Sentinel*.

"Liberty under the law; individual effort and opportunity limited only by restraints which secure equal rights to others—this," said Judge Wilkerson, "is the creed of civil and personal liberty which underlies our civilization. It means freedom of thought, speech and worship; it means liberty of contract. But, on the other hand, it means recognition of those restraints imposed by law which are necessary to guarantee its equal enjoyment by all. It was summed up by Edmund Burke, the great English philosopher-statesman, in these words: 'The restraints on men as well as their liberties are to be reckoned among their rights.' For without a recognition of the restraints imposed by law, the liberty of one is purchased at the price of the destruction of the liberty of others.

"From the growth of this spirit of individual liberty," continued Judge Wilkerson, "has come the development of our free institutions of government. As we have seen, the protection of the life, property and personal freedom of each one of us involves restraints upon the acts of others. If we would impose those restraints upon others, we must consent that the same restraints may be imposed upon ourselves. Those restraints can be imposed equally upon all only by a government acting through the instrumentality of laws."

The Same Principle Applies to the Zoning of Cities

"If our civilization and our government is based on the theory—and it is—that restraints must be imposed on men in order that their rights may be secured, then," the *Fort Wayne News Sentinel* points out, "the principle of zoning rests on the foundation stones of government, on the bed-rock of society. Only by imposing restraints on the individual can the right to enjoy the benefits of zoning be secured by all. Only by restricting the use of each lot in a given section to such purposes as are suitable to a strictly residential district can such a district be developed and maintained. Only through our willingness to be restrained from selling our dwelling site as a place for a filling station may we consistently demand that our neighbor be restrained from selling his dwelling site as a place for a filling station.

"In other words, the protection of our homes against the building of filling stations, public garages or other objectionable structures, in close proximity to our dwellings, involves restraints upon the acts of others; and if we would impose those restraints upon others we must consent that the same restraints may be imposed upon ourselves. Those restraints can be imposed equally upon all only by a municipal government acting through the instrumentality of a zoning ordinance."

A WINNING ARGUMENT FOR FIRE-RESISTIVE ROOF COVERINGS

An ordinance prohibiting wooden shingle roofs was adopted in Shelbyville, Ind., on March 2. On March 16 an effort was made by local lumbermen and by the Red Cedar Shingle Association to repeal the ordinance. This effort was repulsed when Fire Chief Briggs pointed out to the City Council that the home of every local lumberman had a fire-resistive roof covering.

—*News Letter*, National Fire Protection Association, April, 1926.

Causes of Traffic Accidents—as Seen by Chiefs of Police

IN an effort to determine the opinion of chiefs of police as to certain major causes of highway accidents and proposed means of reducing the appallingly high mortality toll from automobiles, a questionnaire has been submitted by THE AMERICAN CITY to chiefs of police in the cities of over 5,000 population throughout the United States. To this questionnaire 480 replies have been received, a summary of which follows:

The first questions had to do with the causes of accidents. The chiefs were asked to list in the order of their frequency four of the most common causes. Carelessness of the driver was placed first by 343. Seventy-eight placed the greatest blame upon the pedestrian. Fourteen gave as the most important cause of accidents, the congestion of traffic. Lack of standard traffic signals and congestion of traffic were placed third and fourth, respectively, in the majority of answers.

As other major causes of auto accidents, 188 mentioned speeding; 151 intoxication; 113 incompetent drivers; 108 glaring headlights; 69 petting parties, and 59 physical or mental disability.

A number spoke of the younger generation and the jazz age as contributing to reckless driving. One chief of police in New Jersey printed in large bold letters, "The Volstead Act," as the major cause for accidents on the highway—though he didn't explain how less prohibition would decrease drunkenness on the highways. Replies from southern states led in the mention of liquor as a contributing element in automobile accidents.

An interesting difference in the answers was marked by geographical or population lines, particularly on the second question, which was: "Do you think that the increasing number of closed cars, with the resulting difficulty in signaling and decrease in view of the road for the driver, is a contributing cause for accidents?"

It was found that in the larger centers of population where the climate is not exceptionally favorable, most of the answers were in the affirmative. This was particularly true of the East and the more densely inhabited sections in the Middle West. In the smaller cities of the Far West, however, and certain sections of the South, negative answers were the rule. It is probable that this is somewhat due to the fact that in these sections open cars predominate, and also that the traffic congestion is not such an acute problem as in the East, where the driver's vision of the road is of vital importance in avoiding danger. The division of vote was 191 affirmative and 270 negative.

Standardized Motor Vehicle Laws and Traffic Regulation Favored

The police chiefs were asked their opinion in regard to the practicability of a law requiring more exacting and uniform drivers' examinations previous to the issuance of licenses. Here the chiefs were almost unanimous. Out of 439 answering the question, all but 23 favored more stringent measures in this regard.

They were in even more accord on the question of standardized traffic regulations. Only sixteen did not agree that these regulations could and should be made uniform.

Legislation requiring regular inspection of mechanical parts, particularly brakes, was favored by 416 against 31 negative answers.

Legislation limiting the speeding capacity of cars to a certain maximum was favored by 318 and objected to by 161. Various means of limiting the speeding capacity were put forward, such as governors on engines and transmission. The maximums suggested ranged from 20 to 55 miles an hour, the average being about 35.

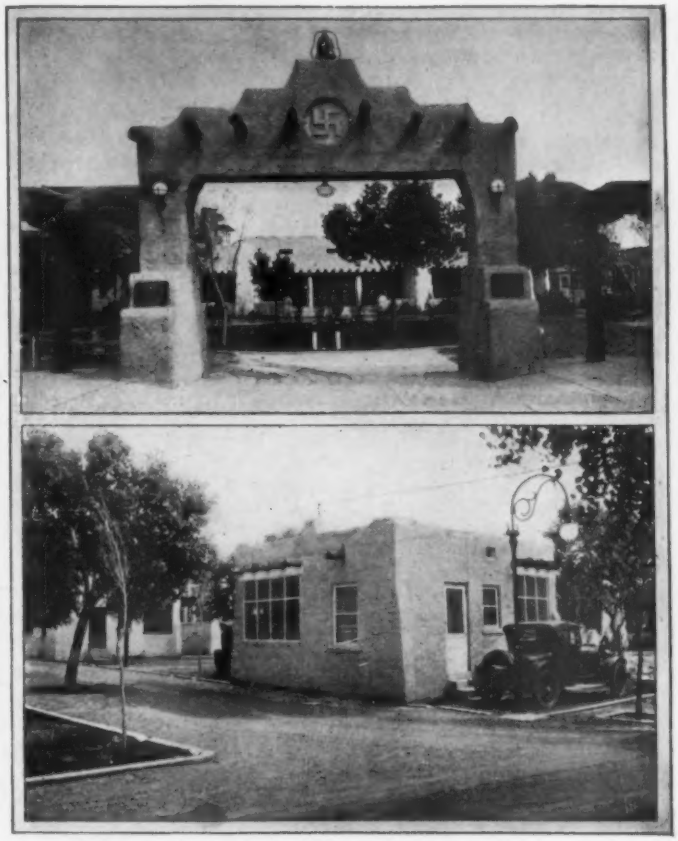
The last question dealt specifically with lowering the fatalities by constructing closed car bodies of steel on the same safety principle as the all-steel railway coach. All but 86 answered this affirmatively. A number of the chiefs were decidedly emphatic in their answers, relating experiences of theirs which indicated conclusively that in the wrecks involving all-steel bodies they had found the strength of steel had saved the lives of passengers. One California chief pointed out that not only did the all-steel body protect passengers in unavoidable wrecks, but that the reduction in the size of the pillars supporting the top gives the driver a better view of the road and permits greater opportunity to avoid accident than the bulky wood posts often used in closed car construction.

For abstracts of the reports of the Committee on Causes of Accidents and of other committees of the National Conference on Street and Highway Safety, see the Municipal Index for 1926, pages 422-429.

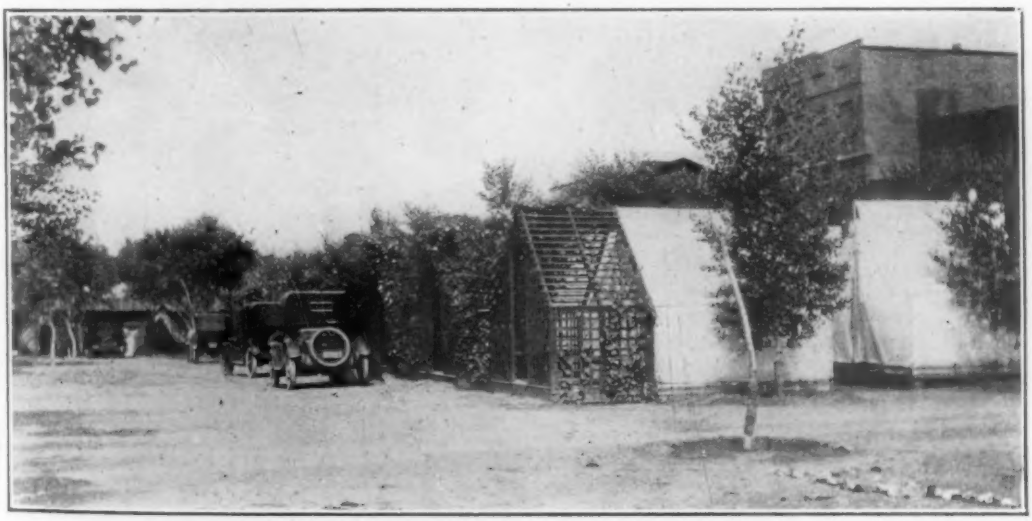
A Tourist Camp Operated as a Business Enterprise

EL PASO, TEXAS.—The city of El Paso had experienced a great many difficulties in the handling of automobile tourists through its free municipal camp. There was a great deal of complaint from the better class of tourists that the surroundings occasioned by the tourist tramp were not as pleasant as they should be. El Paso found also that maintaining a free tourist camp encouraged the use of the camp for an indefinite period by a class of people who eventually became a charge on the Associated Charities. A few business men of El Paso studied the proposition and came to the conclusion that a camp that afforded the proper sort of accommodations and made a small charge would be the solution. They asked the City Council to pass an ordinance governing the installation and management of a tourist camp, and organized a corporation called the Southwestern Tourist Camps Company with a capital of $200,000.

Camp Grande, in El Paso, the first camp built and operated by this corporation, is located on a tract of about ten acres. It is built in the Indian Mission Style. On the front are stores designed to cater to every want of the tourist. These stores are all being leased to merchants with an agreement in the lease that in no event shall tourists be charged more for an article than the same article can be bought for in the city



MAIN ENTRANCE TO EL PASO TOURIST CAMP, WITH VIEW OF RECREATION HALL
TYPE OF BUNGALETTE IN THE CAMP



TENT HOMES IN THE CAMP GROUNDS IN EL PASO

proper. There is a Piggly-Wiggly grocery store, a bakery, a meat-shop, a camp supply store, a drug store, a barber-shop, a restaurant, a laundry, a sub-postoffice, a Western Union station, and a gasoline-station selling oils and greases. The city also maintains a sub-police station.

In the camp proper there is a recreation hall similar to a small country club. There is a large community kitchen, in which there are twenty-four individual gas stoves operated by 5-cent meters, and having the necessary chairs, tables, lockers for dishes, and sinks with hot and cold water. There is a large laundry with laundry tubs with hot and cold water connections, ironing-boards, electric irons, and electric washing machines. In addition to the laundry there is a drying patio, in which clothes can be hung without being exposed to view. All these facilities are free to guests of the camp.

The rates for accommodations range from 50 cents to $5, all of these charges being per car and not per person. For 50 cents the parties who wish to camp secure a space 20 feet by 20 feet, have the use of the community baths that afford tubs and showers with hot and cold water at all hours, and have the use of the community kitchen, the laundry, and recreation hall at no additional expense. For 75 cents they can secure a space 20 feet by 20 feet under a large shelter called Rustic Row, built with pine logs and roofed with pine slabs, under which they are protected from the sun and rain, and have the use of all the other accommodations at no additional expense. For $1 they can secure the use of a little tent home, having a good floor, electric light, two cots, and the use of the other accommodations. For $1.50 they can secure a little bungalette under Rustic Row nicely furnished with a big double bed, mattress, chairs, tables, and kitchenette. For $2 they can secure a little bungalette with private shower-bath, kitchenette, completely furnished with beds, chairs, tables, etc. For $2.50 they can secure a bungalette with a private bath, living-room, kitchenette, and sleeping-room, all completely furnished. For $5 they can secure a bungalette having living-room, dining-room, one bedroom, private bath, kitchenette; in fact, as good an accommodation as any hotel has to offer.

Since Camp Grande was opened, in November, 1923, the tourist traffic going through El Paso has very materially increased, and a great part of it is due to the fact that the accommodations afforded at this camp meet with the approval of the traveling public.

During the year 1925 there were 35,000 cars registered at this camp, averaging four persons per car. For the vear 1926 it has been estimated by the management of the camp that they will take care of not less than 45,000 cars.

One of the great incentives for cities to build this sort of camp is the fact that tourists will stay over from a week to six months, and in many cases become permanent residents of the city.

W. K. MARR,
President, The Southwestern Tourist Camps Company, Inc.

Community Welfare a Growing Element in Work of Real Estate Boards

CIVIC improvement and community welfare have been the keynotes of the activities of the 584 real estate boards in the United States and Canada during 1925, according to an inventory of board activities completed last month by the National Association of Real Estate Boards.

City planning has received special attention as a branch of the boards' work during the year. Seventy-one of the 185 representative boards that have been chosen for study now have permanent city planning committees. The Milwaukee, Wis., board has been influential in bringing before the citizens of Milwaukee County the possibility of zoning the county and creating a county parkway.

A city planner for Orlando. Fla., was obtained through the efforts of the local board. The Bell, Calif., Realty Board has assisted in the purchase of a public park and golf course. Realtors of Amarillo, Texas, were partially resonsible for having the city limits extended and installing a traffic system. The Putnam County, Fla., board has cooperated with the city in drawing up a zoning ordinance. The Duluth, Minn., Board of Realtors acted as advisor to the city in adopting a zoning ordinance. The Beloit, Wis., Real Estate Board assisted in the purchase of a public park and golf course. Realtors of Ashland, Ky., have rearranged and renumbered the streets, and the Shreveport, La., Real Estate Board helped in zoning the city and in obtaining a boulevard around it.

A tourist camp was established by the Lakeland, Fla., Real Estate Board. The sale of bonds for harbor development has been one of the main interests of the Oakland, Calif., and the Santa Ana, Calif., boards. Kansas City, Mo., Realtors have aided in a bond campaign for municipal improvements, and the Savannah, Ga., Real Estate Board succeeded in securing the authorization of a bond issue for a highway.

An aerial survey of the community was obtained by the Board of Realtors of the Oranges and Maplewood, N. J. The Sarasota, Fla., Realty Board started a campaign for a community hotel.

An aviation field has been obtained for Fort Wayne, Ind., through the efforts of members of the real estate board of that city. Realtors of Louisville, Ky., organized and executed a voluntary census of Louisville which was accepted as authentic by the Government Census Bureau. The installation of a traffic system is listed as one of its achievements by the Amarillo, Texas, board.

Appraising of property has received more attention this year than ever before. A number of boards have introduced courses in appraising into their educational programs, among them, the Atlanta, Ga., Real Estate Board, the Milwaukee, Wis., Real Estate Board, and the Real Estate Boards of Lincoln, Nebr., Madison, Wis., and Boise, Idaho. Fifty-six of the real estate boards have made appraisals for their cities during the past year. Seventeen have made appraisals for the county, eleven boards have aided the Government in appraising property during 1925, and five appraisals have been made of state property. Realtors of Canton, Ohio, appraised the city property for tax purposes.

Forward Steps

Reported by Municipal Officials and Chamber of Commerce Executives

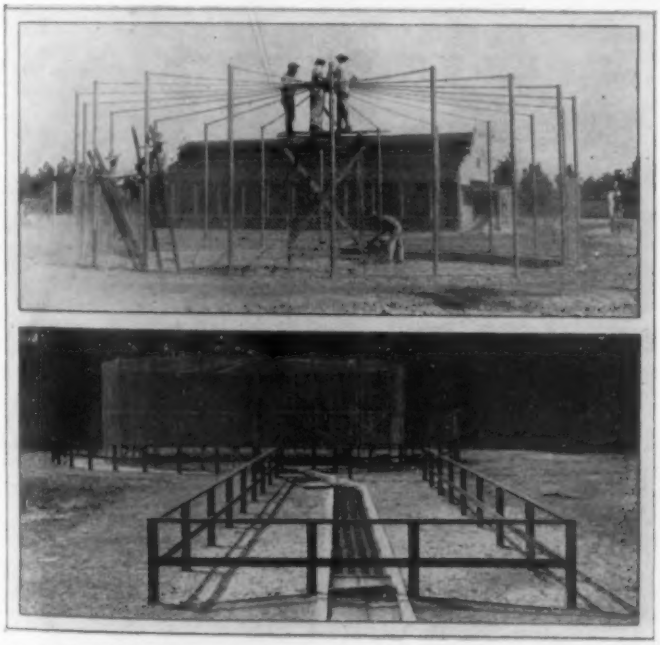
An Unusual Recreational Feature—an Arena in a Municipal Zoo

HOUSTON, TEXAS.—The arena as shown in the accompanying pictures is the result of an experiment that was started three years ago with the purchase of a pair of lions. The only place available for the lions' quarters being small and not allowing enough room for exercise, the idea was conceived of building an enclosure where the lions could be allowed to roam around at will. This enclosure was built from bars from an old jail that had been torn down. Then it was found that the animals could be made to go through a few tricks, which created such an interest with the public that this became a daily feature at the zoo.

A little over a year ago the zoo was moved into much larger quarters, and an arena was designed for use in the new zoo. The enclosure is circular, 40 feet in diameter, the sides being covered with Cyclone chain-link fencing made from No. 6 wire, hot galvanized after weaving and supported on 3-inch galvanized pipe set in concrete 6 feet apart and covered on top with galvanized Cyclone chain-link fencing of 1½-inch mesh No. 12 wire, and supported by 1¼-inch galvanized pipe. The arena is connected with the lion house, which, by the way, is the temporary lion house and not the permanent building which will eventually house these animals. It is about 125 feet long, with concrete side walls and floor, with iron grill top set in concrete, and with sufficient pitch to carry the rain-water to a low point where it is drained into a sewer. The control is by a sliding door at the building and with a trap-door in the arena. Also, the arena has an entrance with a vestibule of wire, giving a double door entrance and exit.

It is planned to build a series of bleachers and to hold daily performances. The space is also available as a place into which to run the animals in case of fire in the building, and the tunnel is so arranged that it can be divided into a number of compartments. I know of no other zoo in America that has this arena feature.

Superintendent of Parks.
C. L. BROCK,



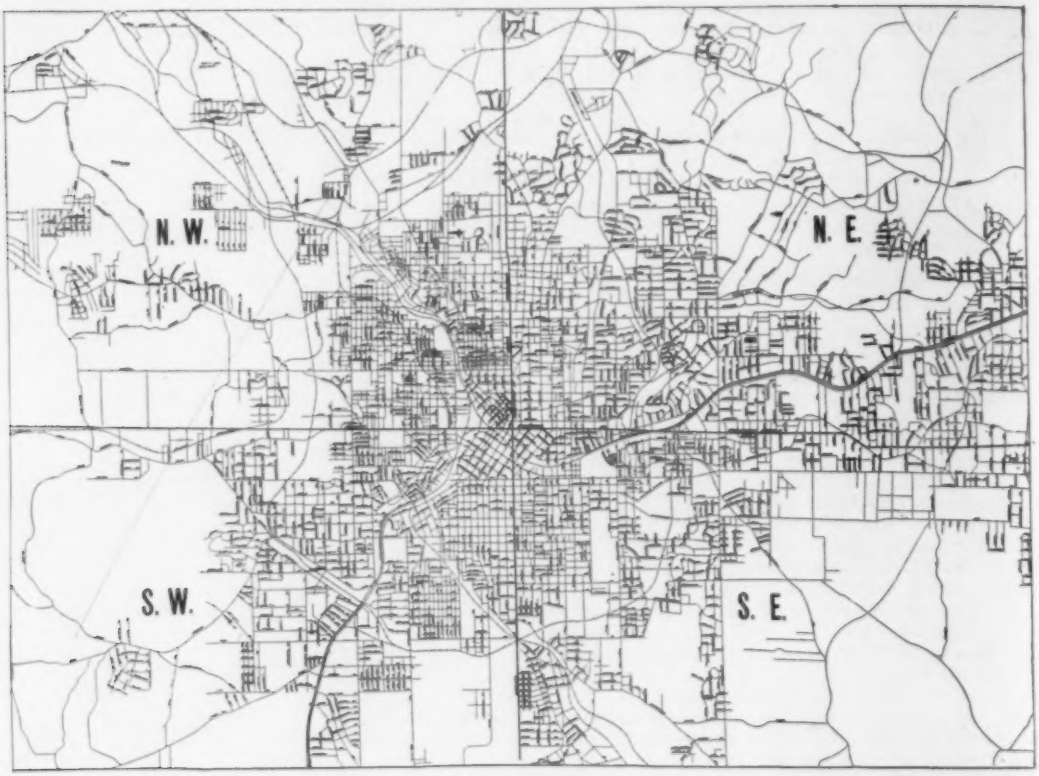
VIEWS SHOWING WORKMEN COMPLETING THE ZOO ARENA IN HOUSTON, TEXAS, AND THE FINISHED STRUCTURE, WITH THE ANIMAL TUNNEL, OVER WHICH A WALK WAS BUILT

Renumbering Atlanta's Streets

ATLANTA, GA.—Because of the rapid growth of the city of Atlanta within the last few years, its old-style, irregular system of street numbering has become increasingly inadequate, with the result that an ordinance requiring the installation of a complete new system was recently passed by the City Council.

After an extensive study of the numbering systems in effect in the larger cities of the country, what is known as the continuous numbering system was selected as the most applicable to the peculiar layout of this city. Under this system, the city is divided by two base lines into four sections designated northeast, northwest, southeast, and southwest, respectively, as indicated on the accompanying map. On streets crossing one of the base lines, the numbering begins at the crossing point in each direction, thus necessitating the use of the suffix N. E., N. W., S. E., or S. W., as the case may be, after each new street number. Numbers on streets that do not touch a base line correspond with the numbers on the base line parallel with the street, regardless of where the street begins. One number is assigned to each twenty feet of space on each side of the street, so that by adding a zero to any house number one may find the distance in feet from the base line.

The actual installation of the new system is now under way, the city having been divided into units for this purpose. As soon as new numbers have been assigned for an entire unit, a notice giving



MAP OF ATLANTA SHOWING BASE LINES DIVIDING THE CITY INTO FOUR SECTIONS FOR NEW STREET-NUMBERING SYSTEM

both the old and the new numbers is delivered to each resident approximately fifteen days in advance of the date on which the change becomes effective. At the same time a complete list of streets in the finished unit, showing both the old and the new numbers, is furnished the telephone, telegraph, express, gas, and electric light companies, the Water Works Department, and the Retail Merchants Association for distribution to its members. The local Postmaster reports that he is receiving hearty cooperation from the large corporations in the vast amount of work involved in making the change.

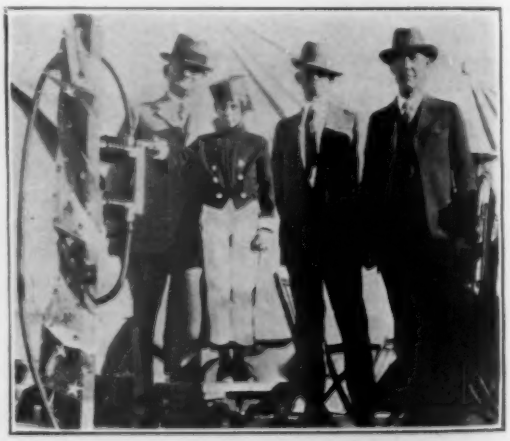
Uniformity and clearness of the new house numbers are assured through the requirement that all lettering shall be in a light color on a dark background, and shall be not less than 2½ inches in height.

B. S. BARKER,
Executive Vice-President, Atlanta Chamber of Commerce.

New Street Lighting Welcomed by Community Jollification

FILLMORE, CALIF.—When the city of Fillmore recently installed a new street-lighting system consisting of one hundred ornamental units, the entire community joined in a jollification in honor of this progressive step.

The principal number on the program for the day's festivities was a parade in which some novel ideas were worked out. Father Time led the procession, followed by the Spirit of Darkness surrounded by men carrying a wide variety of old-fashioned lighting devices, such as torches, candles, lanterns, etc. At the sounding of "lights out" all the business houses in the city were darkened, the band commenced a funeral march, and the procession slowly wended its way along the street to the band-stand. Then, through a switch mounted on



THOSE WHO TOOK PRINCIPAL PARTS IN FILLMORE'S STREET-LIGHTING CELEBRATION

From left to right: G. E. Gaylord, Division Superintendent, Southern Pacific Railroad Company, speaker of the evening; Alice Keiffer (8 years old), who switched on the lights; the City Manager; and Mayor W. H. Price

the stand, the new street lights were flashed on and the Spirit of Darkness was compelled to flee.

Another unusual feature of the celebration was the fact that all expenses were met by the municipality rather than by the time-honored custom of calling on the merchants for contributions. All entertainment features were free, the people being the guests of the city of Fillmore for the day.

C. ARRASMITH,
City Manager.

Fire Protection for Small City and Surrounding Farms

FORT ATKINSON, WIS.—This city of 5,500 population takes much pride in its modern and well-equipped volunteer Fire Department, which has been developed to its present high state of efficiency under the direction of Fire Chief George P. Lohmaier.

The motorization of our fire apparatus began in 1920, when a White combination chemical and hose truck supplanted the antiquated horse-drawn apparatus. In July, 1924, an American-LaFrance 750-gallon, triple-combination engine, chemical, and hose cart was purchased.

In the spring of 1925 the city sent its new pumper to assist in fighting a fire outside our limits. During the absence of the truck, a fire broke out in Fort Atkinson, and although the situation was handled without difficulty, the fire here being slight, the incident called attention to the danger of leaving this community insufficiently protected against a real conflagration while sending help elsewhere. Chief Lohmaier then began to stress the advisability of procuring a community truck designed especially to meet farm conditions where a large supply of water is seldom available. This suggestion met with the approval of the neighboring farmers, who thoroughly discussed the matter at meetings and finally, in the fall of last year, provided funds for the purchase of a Reo 4-ton chemical truck. This is housed with the city's fire apparatus and is ready to respond to rural calls at any time, and to assist at fires within the city limits when needed.

Fort Atkinson's fire-fighting force consists of the Chief, three assistant chiefs, two captains, four lieutenants, one driver, and thirty-four volunteers. Although only two of these men—the Chief and the driver—are on a full-time basis, all members of the force are well fitted for their duties, regular evening classes being held to train the men in the use of the equipment and in up-to-date methods of fighting both farm and city fires.

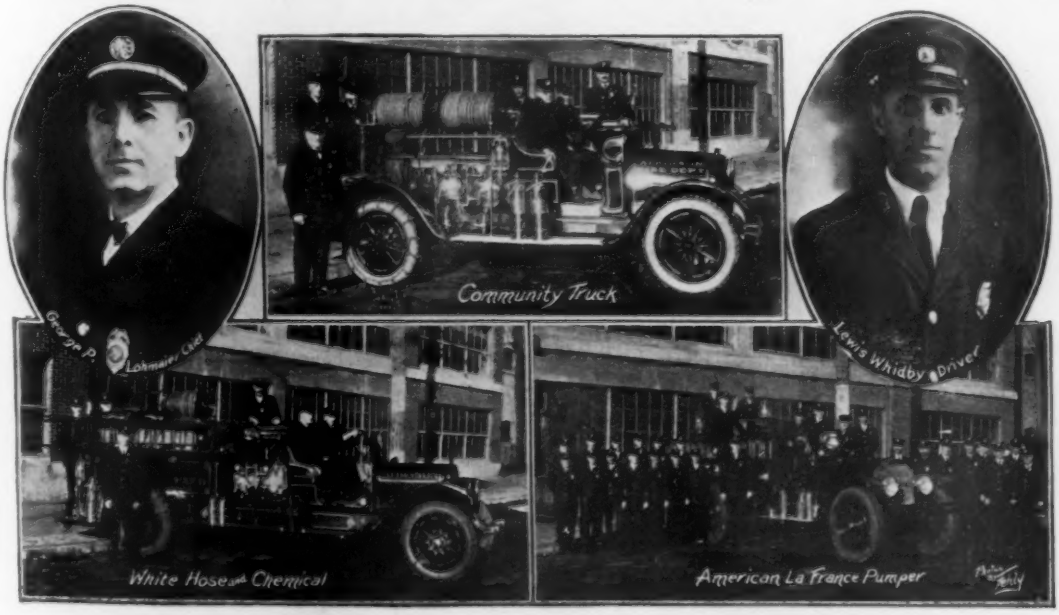
E. H. MILES,
Mayor.

The "Sport of Kings" Comes to Portland

PORTLAND, MAINE.—This city has recently added to its municipal recreational facilities the "sport of kings" game, a bowling-green.

Bowling on the green as a form of adult recreation appears to be having quite an appeal throughout many sections of the country. Portland has harkened to the call and constructed last fall a green which should prove very satisfactory for bowling during the coming season. Bowling on the green is the least strenuous of the popular outdoor amusement games, and should appeal to persons who do not play golf or tennis.

There is nothing unusual about the construction of the green as shown on the accompanying sketch plan, although it is a much more painstaking work than ordinary lawn construction. In the surface lawn construction on the Portland green, a refinement in the form of steamed or baked loam might have been considered, but it appeared to be an expense not justifiable with the limited sum available. Obviously, this heat treatment of loam is to preclude the germination of seed and to prevent the after growth which might tend to destroy the "velvety" green which is the goal in this construction. For this work the top loam was very carefully screened, and any future weed growth will have to be handpicked.

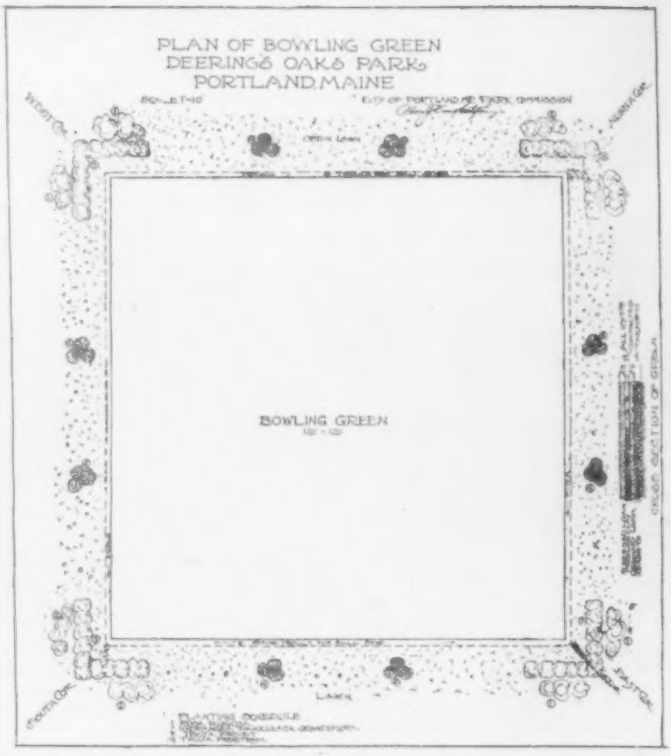


THE WELL-EQUIPPED FIRE DEPARTMENT OF FORT ATKINSON, WIS.

The layer construction of the soils comprising the green may be of interest to some who contemplate building a bowling-green. Especially is this so of the layer of clay so near the surface of the green. This "moisture" layer should protect the green from drought hardship as well as encourage only a fine growth of grass lawn.

The landscape treatment is simple and somewhat formal, which the writer believes is in keeping with the rectangular shape of the green. White beach sand will be used in the ball troughs along the sides of the green. The setting of the green is in a beautiful spot in one of the principal parks in the heart of the city.

WILLIAM J. DOUGHERTY,
Secretary-Engineer, Park Commission.



Two Exceptional Services

EAST ORANGE, N. J.—Two rather unusual services have been instituted this year by the Chamber of Commerce of the Oranges and Maplewood. One of these is the employment of a municipal hostess, whose duty it is to call on all new residents in the four municipalities covered by the Chamber to extend the welcome of the community and to offer assistance in installing the families in their new homes.

It is the function of the hostess to help in securing telephone service, to introduce the children to their new schools, to give instructions on the proper method of registering a local fire-alarm, to explain transportation routes, or to supply any other information that a stranger in the town is likely to need.

The other feature of the Chamber's activities that we believe may offer a suggestion to organizations elsewhere is the employment of a motion picture photographer as a regular member of the Chamber's staff, to compile each week a news reel of local happenings, including those in which this organization has taken part. These pictures are exhibited in the local theaters.

THOMAS F. BURLEY, JR.,
Secretary-Manager, Chamber of Commerce of the Oranges and Maplewood.

A Beautification Plan for Burlington

BURLINGTON, N. J.—A plan of beautification that will eventually include the entire city, and that will help Burlington to realize the ideal expressed in its motto, "The Garden Gate of the Garden State," has been inaugurated by the local Chamber of Commerce and is now in the second year of operation.

This plan, spurred on by the opening of the State Highway, Route 2, through Burlington, was given further impetus through a generous offer made by a local florist, to supply climbing rose plants, free of charge, to property owners and residents along the principal thoroughfares of Burlington who would plant and care for the plants allotted to them. This offer was extended to the residents of five of Burlington's principal streets and to those living along "The Garden State Highway."

The roses offered were thrifty one-year-old plants, and were apportioned as to varieties and colors according to plans for beautification that were determined by the Rose Committee of the Chamber of Commerce. The owners and tenants were asked only to plant the roses on or facing the street front of their properties, according to simple cultural directions to produce the best growth and finest bloom. These roses will produce their first show of bloom this summer, and yearly hereafter will make avenues of striking beauty.

Circulars describing the offer were distributed and later collected by Boy Scouts. A local traction company gave its assent for the planting of one climbing rose plant at every iron tripod trolley pole in the city. This work, together with the delivery of the rose bushes to the residents desiring them, was carried on by the Scouts during the first week of June, 1925.

NOBLE WAGGENER,
Secretary, Burlington Chamber of Commerce.

Boulevard Dedicated as War Memorial

SAVANNAH, GA.—A wide boulevard, with a row of palm trees, symmetrical in height, bordering either side of a center parkway that in the summer time is bright with flowers, is the beautiful and impressive memorial that has been dedicated by the city of Savannah to the men of Chatham County who lost their lives in the World War.

Victory Drive, as this boulevard was named at the suggestion of a Savannah citizen, skirts the

VICTORY DRIVE, SAVANNAH, GA.

south side of the city for a distance of three miles, and connects with the Tybee Road, an eighteen-mile oyster shell highway extending from just beyond the city limits to the Atlantic coast. The idea of planting the palm trees to bear the names of the soldier dead was fostered by the local American Legion Post, and the project was handled jointly by the city of Savannah and Chatham County, county prison labor being used for the work.

This strikingly attractive highway, of which a view is reproduced herewith, has won comments of admiration from many of the vast number of tourists that are constantly passing through the city. Another view of the boulevard may be seen on the front cover of this issue of THE AMERICAN CITY.

NELSON T. STEPHENS,
Secretary, Department of Publicity, Savannah Board of Trade.

National School for Commercial and Trade Executives to Hold 1926 Session, August 16-28

NORTHWESTERN University will again be the host of the National School for Commercial and Trade Executives this summer. The dates selected for the two-weeks' course this year are August 16-28.

At this, the sixth annual session to be held at Evanston, Ill., the course of study will be of value both to experienced secretaries and to beginners, as well as to all who expect to enter chamber of commerce or other civic, commercial, or trade organization work.

Included in the curriculum for the coming session are:

Fundamental Courses: Psychology; Effective Speaking; Social Problems of a Community; Public Finance and Taxation; Marketing and Distribution; Legislation; Accounting and Financial Analysis; Effective Business Communications.

Technical Courses: Organization; Program of Work; Meetings and Committee Management; Membership; Finance; Publicity; Office Administration; Commercial Activities; Industrial Activities; Civic Activities.

Advanced Courses: Organization and Planning of Work; Effective Committee Operation; Membership Building and Conservation; Organization Finance and Business Management; Organization and Community Publicity; Principles of Executive Management; Chamber of Commerce Salesmanship; Meetings of Members.

Special Courses: Industrial Research Development; Problems of the Smaller Community; Social Work—Solicitations—Community Chests; Retail Trade Development; Street and Highway Traffic; Frauds and Fakers; Problems of the Chamber with a Small Staff.

These courses are to be administered by men whose qualifications have been ably demonstrated in university posts, in the world of business, or in the civic commercial or trade organization field.

The officers of the school are: President, F. Roger Miller, Asheville, N. C.; Secretary-Treasurer, John N. Van der Vries, Chamber of Commerce of the United States, Chicago.

Swimming Pool Sanitation

Bathing Load Limits

1. There should not be any basic difference in the design of artificial indoor and outdoor pools, so far as the design relates to the sanitation of the pool and water.

2. Bathing load limits will depend upon the following conditions:

A. Frequency of changing the water. (Fill and draw pools.) The total number of bathers allowed to use the pool during any period of time should not exceed twenty persons per 1,000 gallons of *clean water*. "Clean water" is understood to mean *new* clean water used to refill the pool, *new* clean water used to replace loss by splashing or during cleaning, water taken from the pool and returned after filtration, or any combination of such waters.

(1) Method of determining bathing load limit indicated above.

Assuming a pool of 50,000 gallons. Also assume water being withdrawn from the pool and replaced with new water or properly filtered water at the rate of 2,000 gallons per hour.

Under paragraph A, the volume of new, clean water being added would be sufficient for 2 x 20 (40) persons per hour, or 400 persons during a 10-hour bathing day. If the flowing through or recirculating were continued throughout the 24 hours with bathing limited to 10 hours, there would be an accumulation of 28,000 gallons of clean water during the non-bathing period, which would permit the use of the pool by 28 x 20 (560) additional persons, or a total of 400 plus 560 (960) persons during the 10-hour day.

B. Frequency of disinfection. (Flowing through or recirculation pools.)

The total number of bathers allowed to use the pool during any period of time should not exceed 7 persons per 1,000 gallons of water in the pool, unless the pool shall have been completely disinfected once during the period. "Completely disinfected" means that the method of disinfection shall be such as to insure a bacterial quality of water as prescribed under "Bacterial Quality of Water" given below:

(1) Method of determining bathing load limit indicated above.

Assume a pool of 50,000 gallons.

50 x 7 persons (350) may use pool after refilling before disinfection is required. After complete disinfection, 350 additional persons may use the pool, at which time 350 plus 350 plus 300 persons (1,000 persons) will have used the pool, and the water must be replaced.

3. An average of 35 square feet of space per adult should be allowed at all times to prevent accidents due to overcrowding.

4. The length of the bathing period may be regulated by local conditions and preferences; there being no apparent hygienic reason for placing a limit.

5. The depth of water for diving may be safely established as follows:

A. Diving from water level, safe depth is 5 feet.

B. Diving from an elevation of 3 feet, safe depth is 6 feet.

C. Diving from an elevation of 6 feet, safe depth is 8 feet.

D. Diving from an elevation of 10 feet, safe depth is 9 to 10 feet.

6. A 10-foot area surrounding the diving plank should be sufficient protection for the diver.

7. The number of persons allowed within

A Source of Health or Disease

The public swimming pool has no equal as a form of recreation, and in season enjoys a heavy patronage. It is likewise true that the swimming pool can boast no equal as a medium for the spread of certain communicable diseases amongst its patrons—unless it be operated under definite sanitary rules and regulations. In realization of this fact the Texas State Board of Health has found it necessary to adopt, and offer in an advisory capacity to those concerned, definite sanitary regulations dealing with this healthful recreation.

These sanitary regulations, made available for the readers of this magazine through the courtesy of the Texas Association of Sanitarians, are based upon general recommendations proposed by the Committee on Bathing Places during the 1925 Conference of State Sanitary Engineers, the American Public Health Association, and the American Association for Promoting Hygiene and Public Baths.

The factors to be considered in dealing with the swimming pool situation from a sanitary standpoint are: bathing load limits, swimming pool construction, maintenance, sanitary quality of swimming pool waters, and standard rules to be observed by bathers.

the 10-foot area at one time should not exceed three or four at the time a diver is about to enter the water.

Standards for Swimming Pool Construction

1. The pool should be well lighted.
2. The interior surface of the pool should present a perfectly smooth surface, without cracks, crevices, sharp corners, or pockets to shelter dirt and disease germs.
3. The pool should be surrounded by an overflow trough, and the floor surrounding the pool should be drained so that no water can flow from the floor into the pool.
4. The pool and the surrounding floor should be free from obstructions.

Standards for Swimming Pool Maintenance

1. Unless there is a constantly inflowing stream of absolutely clean, clear, colorless, fresh water, this condition should be approximated by filtration, refiltration, and disinfection.

2. Where treatment is needed, filtration alone should not be relied upon to maintain the purity of the pool. There should also be disinfection by hypochlorite of lime, chlorin gas, ultra-violet rays, ozone, or other suitable methods.

3. Visible dirt on the bottom of the pool shall not be permitted to remain more than twenty-four hours. Any visible scum or floating matter on the surface of the water shall be removed within twenty-four hours by flushing or other effective means.

4. There should be an attendant proficient in swimming and life saving always on duty while the pool is in use, and at other times ingress to the pool room should be prevented.

5. Every pool operator should be supplied with a proper notebook or with blank forms on which should be recorded every day the number of persons using the pool, the volume of new water added, the temperature of the water, and the temperature of the air. Wherever a pool is used by both males and females, the number of each and whether adults or children should also be recorded. At all pools where artificial circulation, filtration, or any chemical treatment is used, a full daily record should be kept of the actual time pumps and filters are in operation, of the time each filter is washed and cleaned, of the time and amount of each chemical used or added, of the time the bottom and sides of the pool are cleaned, the results of all acidity, alkalinity, and excess chlorin tests.

Standards for the Sanitary Quality of Swimming Pool Waters

1. *Excess Chlorin.*—Whenever liquid chlorin or calcium hypochlorite are used for swimming pool disinfection, the amount of available or excess chlorine in the water at all times when the pool is in use shall not be less than 0.1 p.p.m. nor more than 0.5 p.p.m.

2. *Acidity—Alkalinity.*—Whenever alum or sulphate of alumina is used during purification or repurification of swimming pool waters, the water at all times when the pool is in use shall show an alkaline reaction to methyl-orange.

3. *Clearness.*—At all times when the pool is in use, the water shall be sufficiently clear to permit a black disk six inches in diameter on a white field, when placed on the bottom of the pool at the deepest point, to be clearly visible from the sidewalk of the pool at all distances up to ten yards measured from a line drawn across the pool through the disk.

4. *Temperatures.*—The water in any swimming pool should not be artificially heated to a temperature above 72 degrees F. The temperature of the air at any artificially heated swimming pool must not be permitted to become more than 8 degrees F. warmer nor more than 2 degrees F. colder than the water in the pool at any time when the pool is in use. For best results, it is desirable that air temperatures should be about 5 degrees F. warmer than pool temperatures.

5. *Bacteria Count Agar.*—2 days—20 degrees C. (This count optional.) Not more than 10 per cent of samples covering any considerable period shall exceed 1,000 bacteria per c.c. No single sample shall contain more than 5,000 bacteria per c.c.

6. *Bacteria Count on Agar or Litmus Lactose Agar.*—24 hours—37 degrees C. Not more than 10 per cent of samples covering any considerable period shall contain more than 100 bacteria per c.c. No single sample shall contain more than 200 bacteria per c.c.

7. *B. Coli, Presumptive Test.*—Not more than two out of five samples collected on the same day, not more than three out of any ten consecutive samples collected on different dates to show a positive presumptive test.

8. *Tests for Excess Chlorin.*—At any pool where liquid chlorin or hypochlorite of lime is used for disinfection, the operator should be supplied with a proper outfit for making the orthotolidin test for excess chlorin and with permanent standards showing maximum and minimum permissible chlorin in the water. Tests for excess chlorin in the water must be

made every day that the pool is in use.

9. *Tests for Acidity.*—At any pool where alum or sulphate of alumina is used or where artificial alkalinity is added to the water, the operator should be supplied with a proper outfit for testing acidity and alkalinity, and must make such tests on the water every day that the pool is in use.

Standards for Bathers

1. No person suffering from fever, cold, cough, inflamed eye, skin disease, or sores shall be permitted to use the pool.

2. No person suffering from any communicable disease shall be permitted to use the pool.

3. Before entering the pool all persons shall use shower-baths, including soap. The pool is not intended to be used as a bathtub.

4. All bathing suits, caps, and towels must be properly sterilized before use in the pool.

5. Spitting in the pool, runways, aisles, or dressing rooms is expressly forbidden.

6. The use of public combs, brushes, or drinking cups shall not be permitted.

7. Bathers who go outside bath-house or enclosure shall use foot-bath and shower before re-entering the pool.

8. Persons not dressed for bathing shall not be allowed on walks surrounding the pool, and bathers shall not be allowed in space reserved for spectators.

9. Throwing into the pool any object or substance that may endanger the safety of the bathers, or contaminate the pool in any way, or produce unsightliness, is prohibited.

10. No eating or smoking shall be permitted in the pool.

ACKNOWLEDGMENT.—From "Applied Municipal Sanitation," recently published by the Texas Association of Sanitarians, Austin, Texas. See Department of Municipal and Civic Publications in this issue.

A Game Which Teaches Highway Safety

THROUGH the ingenuity of two New York school teachers in recently inventing the game of "Safety City," children can be taught practical lessons in highway safety while enjoying a fascinating game.

"Safety City" is not the result of an inspiration, but of much thought and careful study. In their work among the children, the inventors, Miss Rose Haibloom and her sister, Miss Clara Haibloom, realized the need for some new, appealing way of driving home the necessity for caution on the streets. To instill a subconscious regard for safety rules through an amusing game seemed the most effective solution. Having in mind the fact that jay-walking is shown by statistics to be one of the chief causes of highway accidents to pedestrians, the warning against such carelessness is made one of the strong points of the game. In his journey through "Safety City" toward the home goal, the player pays a heavy penalty for any disregard of the jay-walking rule; he learns to wait on the corner while the fire engine or the ambulance passes; he cannot cross while a parade goes by; and the "stop" signal must be obeyed, etc.

Though primarily intended for children, the game may be played with much interest and profit by the older folks. The game is planned so that a family of four may participate, taking their parts as in real life, or the children may play grown-up roles, which is always an inducement. Further information may be secured from Miss Rose Haibloom, Walton Junior High School, New York.

THE INVENTORS OF THE SAFETY CITY GAME TEACHING IT TO CHILDREN

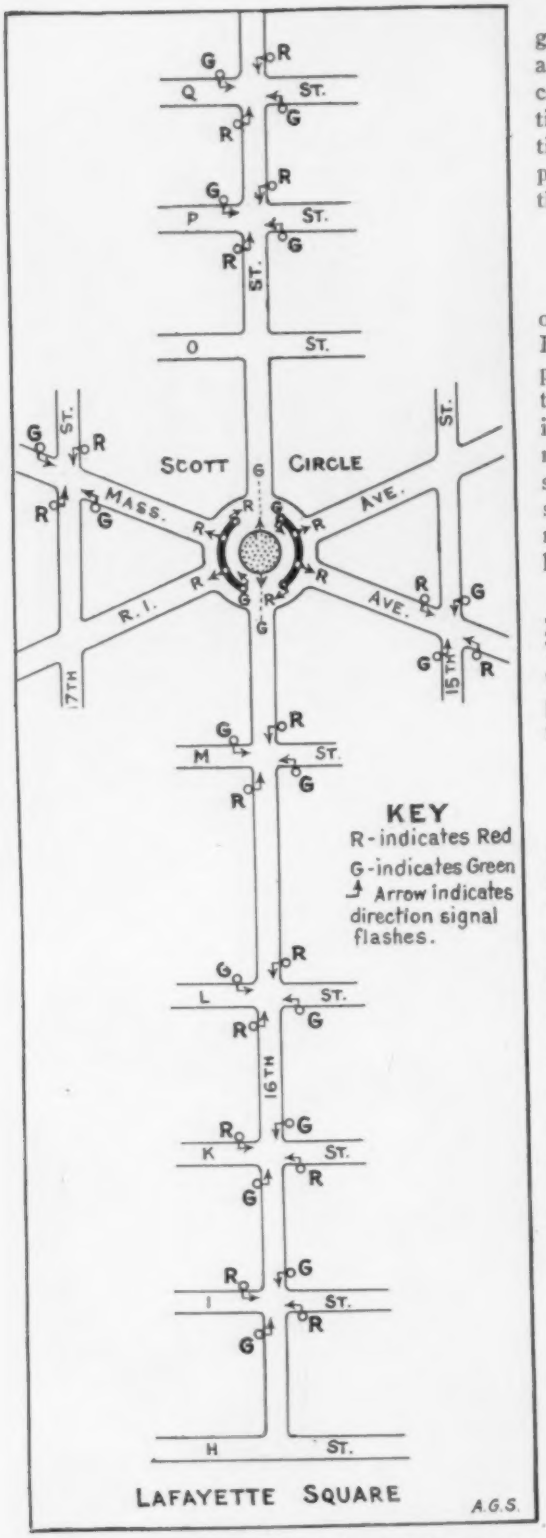
ON SIXTEENTH STREET, WASHIGTON, D. C., CROUSE-HINDS TRAFFIC SIGNALS ARE INSTALLED ON LIGHTING STANDARDS AT ALL FOUR CORNERS OF ORDINARY INTERSECTIONS

Platoon Traffic System Cuts Running Time in Two

By Lieut.-Col. I. C. Moller
Assistant Director of Traffic, Washington, D. C.

THE system of electric traffic signals put in operation in Washington early in January of this year has been a revelation in a number of ways, and a general feeling of dissatisfaction on the part of the public, due to previous slowing up of traffic, long waits, high bursts of speed to beat out the lights, plus a lack of sympathy for all traffic regulation, has been turned to a very general approval of the new system.

Before the traffic signals were installed on Sixteenth Street, it was possible to drive from Lafayette Square to Florida Avenue, a distance of 7,000 feet, in 7 minutes. This required a burst of speed and a jamming-on of brakes at intersections, and was in all a nerve-wracking proposition. When the lights were first turned on, it was still possible to drive the distance in 7 minutes, but a speed of about 30 miles an hour was necessary and the waits were of 1½ minutes duration. This long wait was necessary on account of the heavy cross-traffic on Massachusetts Avenue and on U Street. The rest of the cross-streets carried comparatively little traffic, and it irked the public to sit in their cars for a minute and a half while no traffic was in sight on the intersecting streets. The dissatisfaction spurred us to give considerable study to the matter. We found the answer by simply reversing the red and green lenses on certain intersections, so that on entering Sixteenth Street at Lafayette Square if the driver finds himself confronted by a green light at I Street there will also be a green light at K Street, while the lights at L and M Streets are both red. The driver, proceeding at the legal speed limit, will pass both green signals, and the red signals at L and M Streets will change to green just as the car reaches L Street, the signals just passed at I and K Streets becoming red at the same time. In this manner the motorist driving at 22 miles per hour can go through the entire length of the controlled zone without a stop; the signals constantly turning green as he approaches them.



MAP SHOWING POSITION OF SIGNALS ON SIXTEENTH STREET, SCOTT CIRCLE AND MASSACHUSETTS AVENUE

Here in Washington, where the blocks vary greatly in length, it has been necessary to arrange the groups of green and red lights to conform to the distance to be traveled. Sometimes every other signal will change, sometimes they will run in pairs, and at other points there may be three consecutive lights of the same color.

Intervals Changed During Rush Hours

It is all worked out on a basis of a 35-second interval for a speed of 22 miles per hour. During the rush hours, when traffic is comparable with that on Fifth Avenue, New York, the timing is increased to 45 seconds, as during such periods of congestion a speed of 22 miles per hour cannot be maintained. In the same manner, the timing is changed on wet or snowy days when the condition of the pavement is such that a speed of 22 miles per hour would be dangerous.

This system has cut the running time from 7 minutes to 3½ minutes on the average. There are, of course, times when a motorist will be blocked and miss a light. It rarely happens, however, that 5 minutes is consumed in the trip.

Operation of Control Apparatus

Our control apparatus is located in a fire-station near the system and is in charge of a police officer at all times. For this purpose we use officers who have been injured and, while able to be around, are not in condition to do duty on the street. The officer on duty has a list, prepared by the fire department, of all boxes in responding to which fire apparatus uses the section controlled by signals. When an alarm comes in from one of these boxes, the officer throws a switch which turns all the signals red and amber and which, in addition, causes them to flash continually as long as the switch is turned. All motorists are required to clear intersections and stop as near the curb as possible while this fire signal is in operation.

The methods as described above have proved a most effective check to speeding. There is now no speeding whatever in the controlled zone. The speeder has learned that if he exceeds the legal limit he will be stopped by a red light at every intersection, so he has simply stopped the practice.

Our accident reports show 32 per cent fewer accidents in January and February on signal-controlled sections of streets than occurred on the same sections during November and

December before the signals were working. In November and December accidents involving injuries to persons on these sections were thirteen, one of which was fatal, with six serious injuries. In January and February, four persons received minor injuries.

Increased Safety for Motorists and Pedestrians

Pedestrians, for the first time in history, are able to cross these streets with safety. It is found that, walking at a normal rate of speed, the light changes just about in time to coincide with the arrival of the pedestrians at the intersection, so that it is seldom necessary to wait before crossing. Of course the right-hand turn is bad for the pedestrian, and the only way to make it safe is to entirely eliminate it. But it is not always practical to do so all over a city, particularly one laid out like Washington.

I am thoroughly convinced that electric traffic signals properly installed and operated will expedite the movement of traffic, will provide a high degree of safety, and will meet with general public approval. Here in Washington, where they began by hating them, they are crying for more.

LIGHTING STANDARDS AND TRAFFIC SIGNALS, SCOTT CIRCLE, WASHINGTON, D. C.

Federal City Planning Bill

WASHINGTON, D. C.—The Gibson Bill to provide for a comprehensive plan for the District of Columbia and its environs, which passed the House on February 8, was passed by the Senate with two amendments on April 2.

At the request of Chairman Zihlman of the House District of Columbia Committee, both the House and the Senate have appointed conferees to adjust the differences. It is expected that the bill in final form will provide that in addition to the seven ex officio members of the present Capital Park Commission there shall be added "four eminent citzens well qualified and experienced in city planning, one of whom shall be a bona fide resident of the District of Columbia." The Senate amendment, omitting the provision that executive officers shall adhere in principle to the plan, will probably prevail.

If the measure is finally adopted in this form, there will be set up an excellent machinery for producing an adequate comprehensive plan for the capital city and its environs.

HARLEAN JAMES,
Executive Secretary, American Civic Association.

Municipal Electricians Planning Important Convention

THE 1926 meeting of the International Association of Municipal Electricians will be held in the Battery Park Hotel, Asheville, N. C., September 21 to 24, inclusive.

The Committee on Arrangements is working hard to prepare an exceptionally interesting program for this important meeting. The committee consists of: L. H. Gascoigne, Superintendent of Fire Alarm, Detroit, Mich., President; E. H. Benz, Superintendent of Fire Alarm, West New York, N. J., Secretary; L. A. Duckett, Chief, Fire Department, Asheville, N. C.; D. R. Snider, City Electrician, Augusta, Ga.; Charles Berst, District Manager, Gamewell County, Atlanta, Ga.; C. H. Bartlett, Director of Public Safety, Asheville, N. C.; Daniel J. Morgan, Sales Engineer, Hazard Manufacturing Company, Wilkes-Barre, Pa.; N. E. Cannady, State Electrical Inspector, Raleigh, N. C.; C. T. Johnson, Electrical Inspector, Asheville, N. C.

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NEW FIRE APPARATUS IN SWEETWATER, TENN., THAT HELPED TO LOWER INSURANCE RATES

These Small Cities, Also, Have Secured Better Fire Protection and Lower Insurance Rates

(Reports from Inspection and Rating Bureaus, Continued from the April Number, Page 374)

From the Tennessee Inspection Bureau, Nashville, Tenn.

COOKEVILLE, TENN., population 3,500, was formerly in the 9th class for fire insurance rating. The source of water-supply was a small spring having a maximum output of 40,000 gallons per day. The spring was 2½ miles from town, with a 2-inch supply line. In the town were an 80,000-gallon suction pool and one 500-gallon-per-minute electrically driven pump. The fire department consisted of volunteers, and the equipment of hand-drawn hose reels.

In 1924 the town installed a new water-works system in accordance with recommendations of this Bureau, consisting of an adequate spring and emergency river supply, duplicate pumps, additional water-mains, and a 250,000-gallon elevated tank. A standard hose and chemical fire apparatus and a suitable brick fire hall were provided with one full-paid fireman and twelve paid-on-call men. An electric fire-siren was provided, and approved building ordinances and electrical inspection ordinances were passed. When the improvements were completed, the Bureau regraded the town as 6th class, affording an average reduction in the basis estimate of approximately 20 to 25 per cent. The cost of these improvements was approximately $130,000. Since then the Chamber of Commerce has been able to induce a factory to locate there, which would have been impossible under the former conditions.

SWEETWATER, TENN., population 3,100, was formerly graded 8th class. In 1924 the officials of the town applied to the Tennessee Inspection Bureau for recommendations to obtain 6th class grading. The following improvements were recommended: (1) installation of one additional 900-gallon-per-minute pump; (2) installation of a triple combination fire apparatus with 300-gallon-per-minute booster pump; (3) one full-time fireman, with four paid-on-call men sleeping at the fire hall; (4) installation of approved electric fire-alarm siren; (5) enactment of approved building and fire prevention laws, including electrical inspections; (6) prohibition of wood shingle roofs within the town limits. These improvements were carried out and insurance estimates were revised, giving a reduction of approximately 10 per cent. We should estimate the cost of the improvements at about $12,000.

From the General Inspection Bureau, Minneapolis, Minn.

During the past year, because of improvements in fire protection which had been pro-

vided from time to time, it has been possible to give several towns a better classification than they had previously enjoyed. On the other hand, there have been several towns where we had to lower the classification because the fire protection did not conform to the requirements for the old classification.

CANNON FALLS, MINN.—This town up to 1925 was Bureau 4½ class and on a reinspection and regrading went to the 4th class. This betterment in classification was brought about because of improvements in fire protection adopted not only because of recommendations by this Bureau, but because of a general desire for better fire-fighting facilities.

CHANDLER, MINN.—This small town had never had any fire protection until 1925. During the year the town installed a cart with 500 feet of 2½-inch hose, together with a 30,000-gallon tank on a 35-foot tower, with 470 feet of 6-inch mains and 3,300 feet of 4-inch mains and eight double hydrants. Though this protection does not amount to much, nevertheless the town was entitled to a 5th grade classification, which was granted. It is presumed that the rates made on the 5th class basis were approximately 7 per cent lower than had they been refigured on the 6th class basis.

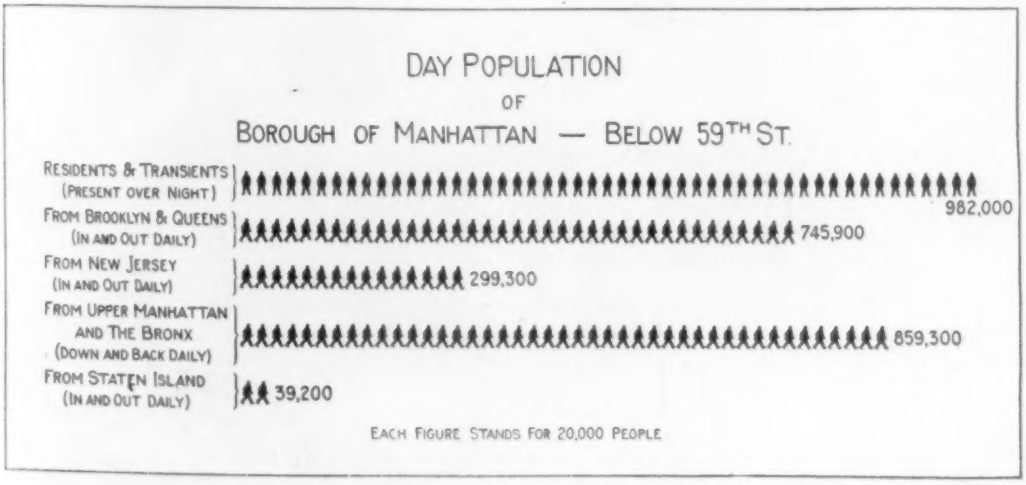
SAUK CENTER, MINN., is a town that has carried 4th grade classification for many years, but because of general improvement in water-supplies, the addition of a motor truck and other improvements in the fire department, a change in classification to 3½ was brought about during the past year.

Means of Transportation Should Lead, Not Follow, the Expansion of Population

THAT Manhattan Island south of 59th Street now has nearly two million daily visitors, in addition to nearly another million people who live there or remain over night, and most of whom also move about during the day, is shown graphically in the accompanying illustrations from a report made public last month by the Regional Plan of New York and Its Environs.

The report was prepared by Harold M. Lewis in consultation with Colonel William J. Wilgus. It presents the result of a survey covering existing facilities for the transportation of passengers and freight in the New York Region, and contains estimates of the probable requirements for unobstructed movement when the population of the Region shall have doubled. The report concludes as follows:

"Additional facilities of all types of transportation should be provided on a vast scale. There is a great responsibility upon the shoulders of the rapid transit planners. They can do much toward directing the lines of future growth, which may lead either to increased congestion and time of travel or to dispersion of business and industry and freedom of movement, in accordance with the amount of farsightedness applied to the plans. The danger of putting such a network of rapid transit lines through the outlying parts of New York City and through the metropolitan sections of New Jersey as will encourage universal intensive development in those areas should be avoided. Means of transportation should lead, not follow, the expansion of population if intelligence is to direct the planning of the community."


DAY POPULATION
OF
BOROUGH OF MANHATTAN — BELOW 59TH ST.
RESIDENTS & TRANSIENTS (PRESENT OVER NIGHT)
982,000
FROM BROOKLYN & QUEENS (IN AND OUT DAILY)
745,900
FROM NEW JERSEY (IN AND OUT DAILY)
299,300
FROM UPPER MANHATTAN AND THE BRONX (DOWN AND BACK DAILY)
859,300
FROM STATEN ISLAND (IN AND OUT DAILY)
39,200
EACH FIGURE STANDS FOR 20,000 PEOPLE

No One Knows How Many Births and Deaths Occur Annually in the United States

AMONG the important subjects to be considered at the annual meeting of the Chamber of Commerce of the United States, to be held in Washington, May 11-13, will be need for more satisfactory registration and compilation of vital statistics throughout the United States. A report on this subject, prepared by the Chamber's Insurance Advisory Committee for submission to the annual meeting, says in part:

"The number of births and deaths occurring annually in the United States as a whole is not known. This can be said of no other first-class nation.

"The benefits of registering births and deaths must be obvious to all forward-looking citizens and to business and professional groups generally. The first aim of government is to safeguard the rights of citizens. Birth registration is essential for establishing proof of citizenship and of identity, for settling definitely questions of right to enjoy civil and property rights, where questions of age and descent are involved, the right to attend school, to enter employment, to marry, to receive passports, to serve in the civil and military arms of government, to enjoy bequests and the proceeds of insurance. All of these are more or less dependent upon adequate proof of birth and parentage.

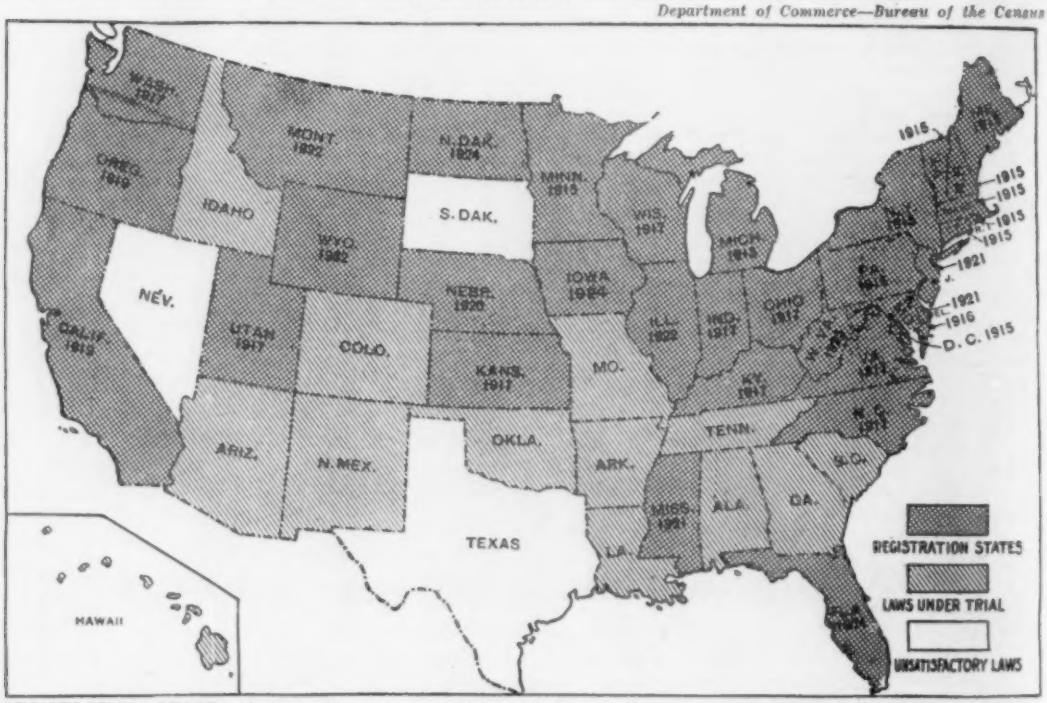
"Death certificates have an equally important bearing upon the civil rights of dependents and descendants of the deceased. Possibly the most important use of birth and death certificates is that made by public health officials. Birth records tell them how fast the population is increasing and where to concentrate their efforts to save infant life and to control preventable diseases. The information on death certificates has been used to suggest ways and means of combating epidemics of controlling tuberculosis and other misfortunes of our population which can be controlled. The reports dealing with automobile fatalities and deaths due to fires are particularly helpful in showing national as well as local trends.

"The Insurance Advisory Committee recognizes the importance . . . of the extension of the registration area for births and deaths so it will cover the whole country. . . . Accordingly, the Committee recommends that the National Chamber encourage the enactment of appropriate laws and practices looking toward the proper collection and maintenance of records of vital statistics in states or localities not now included in what is known as the registration area, as well as the maintenance of the necessary standards set by the Bureau of the Census for states already in the registration area."

BIRTH REGISTRATION AREA: 1926

33 States, and the District of Columbia: Includes 75.9 per cent of total population of the United States.

Department of Commerce—Bureau of the Census



REGISTRATION STATES—States which have satisfactory registration laws and which actually register at least 90 per cent of all births.

LAWS UNDER TRIAL—States with good registration laws, such as the Model Law, which have not been in force sufficiently long to bring registration up to 90 per cent.

UNSATISFACTORY LAWS—States with laws which do not and can not secure good registration of births; for example, laws based on the "county system."

FIGURES INDICATE YEARS IN WHICH STATES WERE ADDED TO BIRTH REGISTRATION AREA

Public Utilities

A New Department Conducted for THE AMERICAN CITY by Professional Members of the American Public Utilities Bureau, 50 Madison Ave., New York:

JOHN BAUER
Rates and Finance
J. C. BRACKENRIDGE
Railroads
BENJAMIN COHEN
Gas Investigations
WALTER JACKSON
Street Railways & Busses
GEORGE A. JOHNSON
Water-Supply and Sanitation
LAMAR LYNDON
Electric Light and Power
MANFRED K. TOEPPEN
Telephones
MARK WOLFF
Accounting

History and Purposes of Public Utility Regulation

TO understand the history of regulation and what is sought to be accomplished, it is necessary to have a clear idea of the nature of public utilities.

Public utilties are deemed to be industries whereon the public welfare is so dependent that there is created a special public interest in the organization, conduct, operation, and rates of the industry. Their importance to the community is the basic reason for the granting of special privileges, such as franchises, monopolies in some communities, or, as in the case of railroads, the right of eminent domain under which they are empowered to condemn land. This principle was first recognized in the case of Munn vs. Illinois, decided by the Supreme Court in 1876, upholding the power of the Illinois General Assembly to regulate charges for storage and handling of grain for Chicago elevators.

For a time regulation was chiefly concerned with the railroads, and resulted in 1887 in the passage of the Interstate Commerce Act. Later it was extended to street railways. Since 1900 the development has been rapid, bringing under control in most states, gas, electric, telephone, telegraph, water, street railway, and steam companies.

At the present time in some sections, because of the serious aspect of the housing situation, a limited control over rentals has been established: likewise the suspension of anthracite mining and the resultant suffering due to the shortage of anthracite last winter has created quite a demand for the regulation of the mining industry to avoid repeated threats against the health, safety, and comfort of the public. These cases illustrate the dependence of the community on certain industries, and this dependence is the major cause for the regulation of the commodities or service.

Since the condition which gives rise to regulation is the importance to the communities of any service or commodity, it is natural that regulation should have for its primary purpose the guarantee of uninterrupted and dependable service. To insure this service and to safeguard the interests of the public, special privileges such as franchises and monopolies have been granted to these industries. Necessarily the rates, operations and finances of these industries are subject to strict regulation, for the forces of competition, whereby in unregulated industries the prices of commodities are kept within reasonable bounds, are not operative in most public utilities, on account of lack of competition.

Public utility regulation may therefore be said to be the means adopted to protect the interest of the public in industries on which the welfare of the public is greatly dependent and where the forces of competition are not fully operative. Regulation is exercised through: (1) fixation of rates; (2) fixation of quality, quantity, condition and extent of service; (3) supervision over finances. These powers are granted and exercised in most states where there is regulation of utilities, and embrace practically the entire field of activity of the industry.

The public is perhaps, most familiar with the first-mentioned exercise of regulatory power-control over rates. Up to the present time most commissions have occupied themselves very largely with questions of rates, because most complaints against the utilities were over the matter of rates. The commissions have also exercised supervision over the finances and capitalization of utilities by means of control over the issue of new securities, in order to protect not only consumers but also investors in public utility enterprises. The quality and extent of service have also received considerable attention.

Need for Greater Control Over Equipment of Plants and Efficiency of Operation

The regulating bodies have, however, not gone very far toward exercising control over those operations of utilities which have to do directly with the furnishing of the service, that is, they have not generally been greatly concerned with questions of efficiency of plants or equipment used or with methods of operation and administration. For example it is doubtful whether they have clearly established the right to order the installation of more economical and efficient gas manufacturing equipment or electric generating equipment in a plant where such equipment is entirely out of date and wasteful to operate. Commissions have not been inclined to interfere here. Yet this is the place where regulation is most urgently needed, for there is little inducement in a regulated industry where rates depend upon the cost of producing the service, to adopt the most up-to-date methods. In unregulated industries a manufacturer who does not keep pace with his competitors is quickly eliminated, for he cannot hope to sell his product at a higher price just because it cost him more to produce it owing to antiquated methods. In many localities rates are high not be-

cause of exorbitant earnings by the particular company serving them, but because operating methods are inefficient and equipment used is obsolete and uneconomical to operate. These rates could be lowered if commissions ordered obsolete equipment retired and efficient substitutes installed, taking into account, of course, the charges for amortization of such old equipment.

Yet we see rate litigation conducted on the public side where this problem receives little or no attention either by the commissions or by the representatives of the public.

A situation illustrative of the lack of regulation in this particular point developed in the recent litigation over the $1 gas law in New York City. In the case of one of the biggest companies it was shown that a neighboring company operating in a less thickly populated territory, and selling only about 15 per cent as much gas as the larger company, was able to produce and distribute gas of a slightly inferior quality at a cost of almost ten cents less than the big company. It is only fair to mention that the smaller company obtained these results because it adopted the constructive suggestions contained in the testimony of the engineer representing the city of New York in prior rate litigation, on which occasion he criticised its equipment and operating methods. Similar instances readily appear when comparisons are made of operating costs in various cities. This situation can be corrected only by constructive work of public utility commissions, and by representatives of the public in rate litigation.

BENJAMIN COHEN.

Cooperative Public Utility Service Organized

A DEVELOPMENT of importance in the public field during the last month is the organization of a "Cooperative Public Service," launched by a group of specialists in the field of regulation. Its aim is to build up a cooperative association of cities, by enlisting as subscribers municipalities, large and small, throughout the United States, and by creating a central headquarters for the collection and dissemination of information, data, and advice on various phases of public utility regulation. While it is not possible to give in this limited space a full description of the plans of this new service, the following outline indicates its scope:

(1) Periodic analysis of court and commission decisions on valuation, depreciation, going value, working capital, overhead, construction costs, rate of return, etc.

(2) Compilations of construction and equipment costs of various classes of property used by public service corporations in the country, together with valuations placed by courts and commissions on such property.

(3) Comparison of rates charged, operating costs, and other operating data of utilities serving similar localities. This will indicate to officials where the weak spots are in the utilities serving them.

(4) Description of important improvements and changes in operating methods, to enable officials to check up on the efficiency of their local companies.

(5) Annual survey of utilities serving territory of each subscribed to give the subscribers accurate knowledge as to fairness of rates and to keep them posted on the local situation.

(6) Analysis of franchise developments, especially for busses, special contracts with utilities, city ordinances; and the collection and dissemination of books and special articles on regulation, etc.

As indicated by its name, this service is to be strictly cooperative. Because of legal difficulties involved, it was deemed expedient to put this service on a subscription basis rather than on a membership basis.

One of the larger purposes for which the cooperative movement was organized is to promote joint effort in working out policies and methods in dealing with utility problems, such as rates. To date, this has not been attempted in any large way, with the result that as a case comes up where a municipality engages in litigation with a utility, it lacks preparedness and has no means at its disposal for a rapid and thorough prosecution of its case. On the other hand, the utility has at its disposal the resources of the tremendous combinations and associations formed for this purpose.

With the resources of an organization such as is projected by the "Cooperative Public Utility Service," with reliable data and well-worked-out plans of procedure and policies, the municipalities will be in a better position to cope with the utility problems confronting them. Ultimately this is bound to result in a better feeling between the municipalities and the companies because of a better understanding by officials of the utility problems.

The service is to be performed at cost, and the charges to the cities are to be adjusted accordingly. An advisory council of men of public prominence, including many city officials, will direct the policies of the organization and look after the interest of the subscribers. Among the members of the advisory council are:

Harry Barth, Secretary, Oklahoma Municipal League, Norman, Okla.
W. M. Cockrill, City Attorney, Great Falls, Mont.
J. H. Dahl, Mayor, Fargo, N. Dak.
B. W. Davis, City Attorney, Pocatello, Idaho.
Fred. H. Gates, Secretary, League of Cities of the Third Class, in Pennsylvania, Wilkes-Barre, Pa.
C. C. Gilbert, Secretary, Tennessee Municipal League, Nashville, Tenn.
Martin G. Glaeser, Professor of Economics, University of Wisconsin, Madison, Wis.
Charles Z. Heskett, City Solicitor, Cumberland, Md.
Ben C. Hill, City Attorney, Tucson, Ariz.
Theo. E. Hopkins, City Attorney, Burlington, Vt.
Edward B. Klewer, City Attorney, Memphis, Tenn.
Thomas W. Koon, Mayor, Cumberland, Md.
Fred. J. Mery, Mayor, Toledo, Ohio.
Will E. Neal, Mayor, Huntington, W. Va.
C. Clarence Neslen, Mayor, Salt Lake City, Utah.
Edward Nugent, City Attorney, Elizabeth, N. J.
Sedley H. Phinney, Executive Secretary, New Jersey State League of Municipalities, Trenton, N. J.
John K. Ruckelhaus, City Attorney, Indianapolis, Ind.
Edwin R. A. Seligman, Professor of Political Economy, Columbia University, New York City.
Lowndes A. Smith, Jr., Secretary, Rhode Island Town and City Clerks Association, Cranston, R. I.
Benj. F. Stapleton, Mayor, Denver, Colo.
Dana B. Van Dusen, City Attorney, Omaha, Nebr.
John E. White, Mayor, Tucson, Ariz.
R. N. Young, Secretary-Treasurer, State Municipal League of Utah, Salt Lake City, Utah.

Public Utility News

Paving Obligations of Traction Companies

NEW JERSEY.—Senator Abel's paving bill, designed to relieve railway companies of paving obligations, has been vetoed by Governor Moore. The Legislature, on recess now until June 22, failed to repass the measure over the Governor's veto.

Holiday Ticket Plan

CINCINNATI, OHIO.—The Cincinnati Street Railway has under consideration a proposal to adopt a holiday ticket plan similar to that now in vogue in Pittsburgh. It is believed that this plan would serve to establish better relations between the car rider and the company and stimulate business during lean hours. In Pittsburgh the railway company sells tickets for 25 cents, good all day and usable as often on the holiday as the bearer wishes.

Increase in Telephone Rates Authorized

INDIANA.—As a result of an order issued March 29 by the Indiana Public Service Commission, increased telephone rates became effective in 44 Indiana cities and towns on April 1. The Commission found that the Indiana Bell Telephone Company is entitled to a 6 per cent return on the capital invested. The value of the property was fixed at $35,500,000 and the depreciation rate 4½ per cent. The Commission criticized the license contract between the American Telephone & Telegraph Company and the Indiana Bell.

High Records in Earnings

NEW JERSEY.—That gross and net earnings, sales of electricty and gas, and passenger traffic set new high records in 1925, is shown by the annual report of the Public Service Corporation of New Jersey and subsidiaries. A heavy increase over 1924 in amount of common and preferred stocks outstanding, extensive additions to facilities in all branches of service, and further improvement in the transportation situation, are other outstanding feaures. Gross earnings of subsidiaries, $94,715,525, showed an increase of 8 per cent over 1924, while operating expenses, maintenance, taxes, and depreciation charges were 7.1 per cent heavier. Operating expenses were 43.7 per cent of the gross, against 45.4 per cent in 1924, the decrease being due mainly to greater operating efficiency. Non-operating income of subsidiaries, $2,057,051, more than doubled that of the preceding year and helped to bring about an increase of $2,155,025 in combined income, although, the net income of the Public Service Corporation itself showed a slight decrease. Net income available for dividends on Public Service Corporation stocks increased $1,907,727 to $9,766,848, but owing to the larger preferred and common dividend requirements, the year's surplus after dividends and reserves was somewhat less than for 1924.

Fights Won for Lower Gas Rates

PALATKA, FLA.—One more fight for lower gas rates has been won by Palatka. The United States court, in which the Southern Utilities company had obtained an injunction restraining Palatka from interfering in the regulation of gas rates in that city, has dismissed the suit and dissolved the injunction.

The city had the gratification, about a year ago, after a long fight, of having the Supreme Court of the United States uphold its contention that the franchise under which the Southern Utilities was operating was valid and binding. This meant that the electric rates as fixed by that franchise were to be adhered to. When this decision was rendered, the Southern Utilities company entered suit in the Federal court asking for an injunction to prevent the city's taking any action in regard to gas rates.

KANSAS.—A reduction of nearly $80,000 a year in the annual gas bill of Winfield citizens will result from an order reducing gas rates from 54 cents to 30 cents a thousand cubic feet, it was announced recently by Chairman Hussey of the State Public Service Commission. The order provides for a 75 cents a month service charge and a charge of 30 cents a thousand feet for gas consumed. The Arkansas City gas company will put in the same rate, as local conditions are identical. The new rate, which was made effective March 1, will affect 2,600 users of natural gas for domestic purposes in Winfield, effecting an average saving of $30.72 in their gas bills. In its order the Commission pointed out that the supply of gas available locally justifies the lower rate, and this may mean that similar reductions may not be ordered for other Kansas towns. Rate complaints from Wichita, Hutchinson, and Newton are still to be heard by the commission.

To Fight Increase in Commutation Rates

WESTCHESTER COUNTY, N. Y.—Corporation Counsel Charles A. Van Auken of New Rochelle, N. Y., on April 2, made public a resolution adopted the previous night at a meeting of representatives of all communities in Westchester County affected by the 40 per cent increase on commutation fares on the New York, New Haven & Hartford Railroad.

The resolution reaffirms the intention of the communities to fight the increase when final arguments are heard by the Public Service Commission and calls on all citizens to support the contest.

Mr. Van Auken was designated in the resolution to represent the commuters at all hearings.

Electric Light Rates Reduced

CLEVELAND, OHIO.—The Cleveland Electric Illuminating Company recently announced light rate cuts over a 75-mile territory between Cuyahoga County and Conneaut, which slashed existing rates more than 50 per cent. The cut is designed to place newly acquired territory on the company's link between South Lorain and the Pennsylvania state line on a par with the Cleveland rate of 5 cents per kilowatt-hour.

CHICAGO, ILL.—New rates reducing lighting costs for a number of suburbs were filed recently with the Illinois Commerce Commission by the Public Service Company of Northern Illinois. Oak Park, Evanston, Forest Park, Cicero, Berwyn, Maywood, and Elmhurst will be benefited, as will the company's new district formed by acquistion of the Chicago Suburban Light & Power Company. Communities as far as the Fox River Valley will obtain reductions.

The downward revision of this lighting schedule is in conformity with the company's policy of extending benefits accruing from increased business.

New Skip-Stop Plan Advocated

According to an article by Carl Parker, manager of sales, bus division, Reo Motor Car Company, which appeared recently in the *Indianapolis Star*, curing the ills of traffic congestion does not call for the elimination of the trolley car, but it does call for the skip-stop plan in the majority of American cities. Skipping not just one intersection, but in some cases as many as five to ten, was advocated. Mr. Parker is a firm believer in the coordination of bus and trolley service carried to its logical conclusion. He believes that a policy of rapid transit for street-car operation that would actually live up to its name would do much to eliminate the traffic disorders of the body politic in most of the more crowded communities of the country. Then in place of trolley-car stops at every corner could be substituted a covering bus service, which would serve to gather up passengers along the right of way, transport them to the trolley stops, and there permit them to transfer to faster express service provided by the street car.

Conditions Suggested for Street-Railway Franchises

CHICAGO, ILL.—Recommendations have been made to the City Club of Chicago by a special committee of that organization authorized to study the transportation subject with respect to the surface railway franchises soon to expire. The Committee suggests:

1. Service is the fundamental requirement—the ability to travel from one point to another with safety, comfort and speed.
2. Unification of bus, street-car, and rapid-transit lines. Ultimate unification of ownership, if desirable.
3. Conditional terminable permits provided that:
   a. The city shall be given actual financial as well as legal power to purchase.
   b. All rights to the use of the streets shall be terminable by the city for non-use or for misuse.
   c. The city shall have full rights to control service, extensions, additions, and improvements.
   d. The state, through its regulatory body, shall have the right to control the issue of securities.
   e. The permit shall provide for the method of (1) valuation; (2) determination of fares; (3) accounting; (4) depreciation and obsolescence; (5) termination for non-use or misuse.

The City's Legal Rights and Duties

Conducted by A. L. H. Street, Attorney at Law

Changing Attitude Toward Sunday "Blue Laws"

AS late as 1877, the Massachusetts Supreme Judicial Court recognized that plaintiff was unlawfully traveling upon a highway, and therefore could not recover injury sustained through a defect in the way, because, instead of taking the most direct route home from a funeral, he and his companion detoured to make a social visit. (Davis vs. City of Somerville, 128 Massachusetts Reports, 594.) Half-apologetically, the Court intimated that it was bound by the Legislature's declaration that it was unlawful to travel on Sunday except upon an errand of "necessity or charity." The Court said:

"Our Puritan ancestors intended that the day should be not merely a day of rest from labor, but also a day devoted to public and private worship and to religious meditation and repose, undisturbed by secular cares or amusements."

But the present trend is distinctly toward framing Sunday regulations with a principal view to enforcing a day of physical rest as an economic measure, rather than with a view to enforced religious observances. There is a growing recognition of the soundness of Charles Dickens' intimation that it is impossible to make "a man truly moral under the ministry of constables, and sincerely religious under the influence of penalties."

After making a careful review of the attitude of the courts throughout the country, the Arizona Supreme Court lately concluded "that it is within the police power of the state to provide for one day of rest at periodic intervals, and that it is discretionary with the legislative authority to select the length of the interval and the day upon which that rest shall be taken, and that such a regulation, if not in conflict with other principles of our Constitution, in no manner interferes with religious freedom or liberty of conscience, but is based upon the undoubted right of the Legislature to pass laws for the preservation of health and the promotion of the public welfare." (Elliott vs. State, 242 Pacific Reporter, 340.)

Under the reasoning of other courts, followed by the Arizona court, a statute making Wednesday, or any other day, the "day of rest" and "taking the lid off" Sunday would be constitutional.

In a California case (Ex parte Newman, 9 California Reports, 502) the Supreme Court of that state said of a Sunday law:

"The law treats of business matters, not religious duties. . . . It establishes, as a civil regulation, a day of rest from secular pursuits, and that is its only scope and purpose. Its requirement is a cessation from labor. In its enactment, the Legislature has given the sanction of law to a rule of conduct which the entire civilized world recognizes as essential to the physical and moral well-being of society. Upon no subject is there such a concurrence of opinion, among philosophers, moralists, and statesmen of all nations, as on the necessity of periodical cessations from labor. One day in seven is the rule, founded in experience, and sustained by science. . . .

"The power of selection being in the Legislature, there is no valid reason why Sunday should not be designated as well as any other day. Probably no day in the week could be taken which would not be subject to some objection."

The right of the legislature of a state or city to make reasonable classifications of occupations in determining what pursuits shall be lawful and what unlawful is quite well established. On the other hand, discriminations which are arbitrary and unreasonable will render a law or ordinance void. Conceptions of charity or public necessity for permitting a given line of business to operate are usually treated as decisive in determining the validity of a Sunday regulation. And, as showing how the Court "split hairs" on this point, the opinion of one of the Missouri Courts of Appeal (State vs. Schatt, 107 Southwestern Reporter, 10, is worthy of citation:

"Circumstances may arise where the labor of a barber on the Sabbath might be regarded as a work of necessity, or, at least, as falling within the principle of brotherly love or charity. For instance, if the barber were called upon to shave one deceased preparatory to burial, or to shave a sick man whose beard was a source of extreme discomfort, or to remove the hair from the head of one suddenly injured."

In a case decided in 1922 (Lakeside Inn Corporation, 114 Southeastern Reporter, 769)

the Virginia Supreme Court of Appeals ruled that if a swimming pool was operated in an orderly manner it might be treated as a matter of public "necessity." The Court is quoted as follows:

"Testimony was . . . offered to show the sanitary condition of the pool, the character of the people who attend on Sundays as well as week days, that the place was conducted in an orderly and proper manner, and that there are a large number of railway employees who can only go to the pool in the daytime on Sundays. These are matters that relate, more or less directly, to the moral fitness and propriety of keeping the place open on Sunday, and it was error to exclude them from the jury."

The power of cities and villages to prohibit the exhibition of moving pictures, etc., upon Sunday has been upheld in numerous cases. And, in some cases, it has been held that the circumstance that a state law may not be broad enough to prohibit such exhibitions does not imply a purpose on the part of the legislature to prevent municipalities from adopting inhibiting ordinances. Of such an ordinance the Minnesota Supreme Court said in the case of Power vs. Nordstrom, 184 Northwestern Reporter, 967:

"It is not the aim of the ordinance to compel the observance of the Sabbath day by the people of North Branch. Its only aim is to regulate the several occupations and kinds of business to which it refers. . . .

"Every business and occupation is subject to the reasonable exercise of the police power of the municipality where it is carried on, and in the exercise of the power a city or village may regulate that which the state has failed to regulate . . . . The statute is silent upon the subject of the exhibition of motion pictures on Sundays. It does not prohibit their exhibition. Neither does it expressly permit it, as it does the playing of baseball on Sunday between certain hours."

Items of Municipal Law

City's Rights in Private Sewer Connections

Concerning a private sewer with which a city had been permitted to connect part of its system, the Illinois Supreme Court said in the case of Knudson vs. Neal, 150 Northeastern Reporter, 626:

"Appellant having joined with the city in building this mutual sewer to drain the territory which naturally drained through her property, the city has the right to use the sewer laid by her across her premises in common with its sewer which forms a part of the mutual system."

State May Impose Joint Burden of Hospital Maintenance Upon Various Municipalities

A statute enacted in Massachusetts consolidates all the cities and towns of Essex County into one district for the maintenance of a hospital at joint expense. The constitutionality of this act was upheld in the case of Essex County vs. City of Newburyport, 150 Northeastern Reporter, 234. The Court said:

"The several towns, cities and counties of the Commonwealth are public agencies established by the Legislature for the convenient administration of government. They are subject in large measure to legislative control. The Legislature may even terminate the existence of a particular municipality and establish different means for the government of the people and territory formerly comprised within it. There are instances where counties and municipalities have been compelled or authorized to contribute for improvements beyond their own borders. The municipal subdivisions of the Commonwealth have not the same right to judicial trial and decision respecting obligations imposed on them for the support of strictly public burdens as have private corporations and other persons. Their powers and duties are not created or regulated by contract but by statutes which are subject to change from time to time as may be determined by the Legislature."

City Cannot Legally Authorize a Structure Which Constitutes a Nuisance Affecting a Private Right

The New York Supreme Court recognizes the right of an owner of business property to enjoin the owner of adjoining property from maintaining a structure interfering with public view of a show-window on the first-mentioned property, despite the fact that the city may have assented to the obstruction. (Brown-Brand Realty Company vs. Saks & Company, 214 New York Supplement, 230.)

Defendant erected a marquise (metal awning) over an entrance to its store building The structure prevented a full view of a second-story show-window in plaintiff's adjacent building, and the Court granted an injunction against its further maintenance.

The decision proceeds upon the theories that there was a deprivation of plaintiff's right to unobstructed light, air, and view through the street; that maintenance of the marquise could not be justified under a municipal permit, because a city cannot legally authorize a structure constituting a public nuisance affecting a private right; and that plaintiff's right to an injunction was not defeated because there might be many structures in the city equally objectionable.

For Purpose of Paying Negligence Judgment Rendered Against It, City May Exceed Statutory Tax Rate

A municipality could not justify refusal to levy a tax to pay a judgment rendered against it on account of personal injury or death, resulting from negligence imputable to the municipality, on the ground that it would exceed the maximum tax rate prescribed by statute for expenses, etc. The statute is deemed to refer only to obligations voluntarily incurred by the corporation. (Arizona Supreme Court, Town of Flagstaff vs. Gomez, 242 Pacific Reporter, 1003.)

Zoning Notes

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Recent Zoning Ordinances and Statutes

QUINCY, MASS.—Ordinance, March 17, 1926

HIGH POINT, N. C.—Ordinance, March 18, 1926

ST. LOUIS, MO.—A zoning ordinance has just been passed by the Board of Aldermen, and is awaiting the approval of the Mayor. The ordinance contains a provision allowing the owner of a lot to build on any portion of his lot to any desired height, provided that the bulk of the building as a whole does not exceed that resulting from a prescribed height limit. Those of our readers familiar with the discussions preceding the adoption of the New York City Zoning regulation in 1916, will remember a suggestion in that connection not only that the owner should be permitted to use his own lot in this way, but that he should be allowed to buy the height rights of his neighbor for use on his own lot. This suggestion was not adopted in New York, nor are there at present any zoning ordinances in this country in which bulk is limited by the total cubage of the structure; but such ordinances may be found abroad.

Height Regulation by Bulk of Building

The provision in the St. Louis ordinance referred to in the accompanying item, is as follows:

HEIGHT—Except as hereinafter provided, buildings may be erected to such height that the cubical contents of said building above the established grade shall not exceed the volume of a prism having a base equal to the projected horizontal area of the building, and a height of 200 feet.

In the case of buildings occupying a lot having frontage on intersecting streets and which buildings are so designed as to provide a setback or open space at the corner or corners where such street intersections occur, or which set back on the street fronts, when such setbacks begin below the 200-foot height above the established grade, the volume determined by the above rule may be exceeded by an amount equal to the volume so taken out of the reference prism of 200 feet height; provided, however, that the total volume of the actual building shall not exceed by more than 25 per cent the volume of said reference prism of 200 feet height.

NEW JERSEY.—P. L. 1926, Ch. 315.—This act gives a board of appeal, in addition to its present powers, the power to determine whether a zoning ordinance in so far as it affects the user of any property in relation to which the appeal is taken, tends to promote the public morals, health, safety or welfare; and if the board determines that this is not its effect in this instance, it may modify or vary any requirement of the ordinance in so far as it affects the user of such property. Such decision is subject to review by certiorari.

The Constitutional Amendment on Zoning in New Jersey

The New Jersey Legislature has just passed a constitutional amendment authorizing zoning in that state. Before it can become effective it must be passed by the Legislature at its session next year and be subsequently ratified by the people of the state. The amendment is as follows:

"The Legislature may enact laws under which municipalities other than counties may adopt zoning ordinances limiting and restricting to specified districts and regulating therein buildings and structures according to their construction and the nature and extent of their use, and the exercise of such authority shall be deemed to be within the police power of the state."

Recent Zoning Decisions

GEORGIA.—*Smith vs. City of Atlanta, Supreme Court.* The amendment of the charter of Atlanta (Acts, 1921, p. 665) authorizing zoning, and the ordinance based upon it is unconstitutional in so far as it authorizes the prohibition of stores in residential districts.

Injunction was the remedy available to the petitioner to secure relief against prosecution threatened in the event that she should proceed to erect the building without permit.

MASSACHUSETTS.—*Bradley* v. *Board of Zoning Appeals of City of Boston* (*Supreme Court*), 150 N. E. Rep. 892. Certiorari. In context of Stat. 1924, Ch. 488, Sec. 20 permitting persons aggrieved by the decision of the board of zoning appeals of the city of Boston to petition for certiorari, the word imports its usual meaning under uniform established practice.

In certiorari only errors of law can be reviewed, and a full report of evidence is unnecessary.

The appointment of members of the board of zoning and adjustment under Stat. 1924, Ch. 488, Sec. 20 from persons nominated by various associations of the city is not an assumption of executive power by the Legislature.

The members of the board, charged with the duty to change the boundaries of zoning districts in Boston, are public officials as distinguished from employees. As the statute is designed to secure men of eminent sagacity for the task, it is entitled to every presumption in its favor; and every presumption must be indulged in that the duty of recommending appointees will be performed by the

boundaries of the several zones established by the Legislature.

The statute conferring on the board of zoning adjustment of the city of Boston power to change boundaries and the zoning map as established by other sections of the act does not delegate legislative powers to the board in violation of the Massachusetts constitution, even though the board was given power on the terms stated to change the boundaries of the several zones established by the Legislature.

On certiorari it was not open to the petitioners to show by evidence outside the record, at the hearing before a single Justice, that conditions which would warrant the board of zoning adjustment in deciding to make a change in districts did not exist.

Since under earlier sections of Stat. 1924, Ch. 488, the Legislature established boundaries of zoning districts in the city of Boston, specifications under Sec. 02 of that law, of grounds on which the board of zoning adjustment could make changes in the boundaries of districts and the zoning map were limitations on the board's power; the six grounds thereof being used distributively and not conjunctively notwithstanding the use of the word "and."

The requirement of the statute that the board shall make a record of its proceedings is definite and peremptory. Absence from the record of explicit reasons for its decision changing the boundaries of a zoning district, as required by the statute, is fatal to the validity of the change attempted to be made by it.

MASSACHUSETTS.—*Marcus vs. Commissioner of Public Safety* (*Supreme Court*) 150 N. E. Rep. 903. Under the Boston Zoning Act, a garage may be erected in a general residence district on the same conditions and limitations and in accordance with the same procedure as in a single residence district, and in no other way. The authority of the State Fire Marshal is conferred upon him as a member of the Department of Public Safety.

The only respondent in a petition for certiorari is the tribunal whose action is to be examined.

MASSACHUSETTS.—*Norcross vs. Board of Appeal of Building Department of City of Boston* (*Supreme Court*) 150 N. E. Rep. 887. Certiorari. One Storber, the owner of a lot in an "L-80" (local business, height, except as increased by width of street, limited to 80 feet) district, in Boston, was by the board of appeal granted the right to erect a building to a height of 155 feet. *Held* that:

The provisions of the height zoning law of 1905 limiting height absolutely to 100 feet were abrogated by the law of 1924; but not the general height limitation contained in the building laws of Boston (two and a half times the width of the street, in no case in excess of 155 feet), nor, probably, the limitations imposed by eminent domain; nor those of the Park Commissioner.

In view of the facts, the action of the board in ordering the Building Commissioner to grant a permit for the building 155 feet high was not erroneous as a matter of law; the question whether such a building will derogate from the intent and purpose of the Boston Zoning Act being primarily one of fact.

MASSACHUSETTS.—*O'Brien v. Turner* (*Supreme Court*) 150 N.E. Rep. 886. The bill by the owner of a lot in a restricted residence district in the city of Milton, established under the zoning law, Gen. Laws Ch. 40, § 25-30, to enjoin another owner from erecting stores in the district, does not show such private injury as authorized suit by plaintiff in his own name.

The erection of stores in a restricted residence district does not constitute nuisance, apart from the zoning by-laws.

NEW JERSEY.—*Bauer v. Board of Fire and Police Commissioners of Paterson* (*Supreme Court*) 4 N. J. Adv. p. 561. An ordinance prohibiting the erection of a motor vehicle service station within 200 feet of a church, is a valid exercise of the police power. *Schait v. Senior* held not overruled by the Nutley case.

NEW JERSEY.—*Bowen v. Mayer and Aldermen of Jersey City* (*Supreme Court*) 132 Atl. Rep. 334. A local government agency, such as a city, borough, or town, has no inherent power to regulate the construction or type of buildings within its boundaries; such power being derived from the Legislature.

Under the zoning statute of 1924 the power to zone the city must be exercised as designated, and cannot be exercised at the will of the Commissioners in each individual application.

Where the construction of garages was not prohibited by a zoning ordinance passed under the statute of 1924, and the facts were undisputed, a peremptory writ of mandamus to grant a building permit will be issued.

NEW JERSEY.—*Cahill v. Hague* (*Supreme Court*) 132 Atl. Rep. 331. The refusal of a building permit for a nine-car fireproof garage in a residential district held unwarranted, in view of the large number of public garages in the vicinity.

NEW JERSEY.—*Peerless Oil Co. of Pennsylvania v. Hague* (*Supreme Court*) 132 Atl. Rep. 332. The zoning commission cannot revoke a valid permit to build a motor vehicle service station after acceptance and expenditure of money on it; and mandamus does not lie to compel its reissue because it is still existent.

The zoning commission is not the proper tribunal to pass on the invalidity of a permit to build except in case of fraud in its procuring or statutory prohibition.

NEW JERSEY.—*Wilkop v. Garner* (*Supreme Court*) 132 Atl. Rep. 339. An ordinance forbidding the building of a public garage within 200 feet of a school or other designated public institutions held a valid exercise of the police power.

NEW YORK.—*Goldenberg v. Walsh* (*Court of Appeals*) *New York Law Journal* April 8, 1926, p. 124. The action of the board of appeals denying permission to change a store into a garage sustained on the grounds that the Court should not attempt to exercise the function of the board. Appellate Division (215 App. Div. 395) overruled. Dissenting opinion of McAvoy, J., adopted.

NEW YORK.—*Application of Melita* (*Supreme Court*) 213 N. Y. Supp. 674. Where a zoning ordinance provides that in case a protest against an amendment is presented duly signed and acknowledged by the owners of twenty per cent or more of any frontage purposed to be altered, such amendment shall not be passed except by the unanimous vote of the Council, an amendment against which such a protest has been filed, which does

not receive a unanimous vote, is invalid; and the Council cannot pass such an amendment under its general ordinance power, by a majority vote.

NEW YORK.—*Matter of Hoffer v. Schwab (Supreme Court)* 126 Misc. Rep. 289. Chapter 31 of the City Ordinances of the city of Buffalo, the provisions of which regulate the location and use of public garages within the city, is invalid, because of the absence of any grant by the city charter of power to the Council to enact ordinances regulating public garages; nor does Subd. 25 of § 20 of the General City Law grant such power.

NORTH DAKOTA.—*City of Bismarck v. Hughes, Supreme Court.* In 1923 the Legislature passed a zoning empowering act following, in form, the Standard Act prepared by the Department of Commerce, Washington, D. C. Under this act the city of Bismarck passed a comprehensive zoning act, dividing the city into four districts, namely, "A" residence, "B" residence, "C" commercial, and "D" industrial. The defendant is the owner of a corner lot located in an "A" residence district in which the building must have a front yard on one street of at least 22 feet in depth, a side yard on the other street of at least 10 feet in width, and be designed to accommodate not more than two families. On appeal the board of adjustment approved of the refusal of the City Commissioner to allow a four-family house on the lot. Thereupon the defendant began to construct a four-family house within 2 feet 6 inches or less on one side, and within 15 feet 3 inches on the other, from the streets on which the house is situated.

Held, sustaining the Court below (see Zoning Notes for September, 1925), that the provisions of the statute and the ordinance in question were a valid exercise of the public power.

Recent Zoning Literature

The St. Louis, Mo. *City Journal* of February 2, 1926, contains a full opinion of the City Counselor with regard to the zoning ordinance, just passed by the Board of Aldermen, and now awaiting the approval of the Mayor and of the enabling act upon which it is based.

In *Minnesota Municipalities* for January, 1926, will be found a Report of the Committee on City Plan, by George H. Herrold, Chairman, presented at the Alexandria Convention, June, 1925. It gives in graphic form the progress of zoning in the United States, and especially in Minnesota.

The collection of Cases on Municipal Corporations reviewed elsewhere in this issue of THE AMERICAN CITY is intended primarily for the use of students in law schools and similar institutions, but is so well indexed as to be of general utility. This is the first time that a case book has included material on city planning and zoning, and the selection of cases is admirable. In making these subjects a part of the instruction given his students, Professor Tooke has performed a real service, not only for the students, but for the profession of law and the community.

Insurance to Be Denied to Motorists Whose Right to Drive Has Been Revoked by Public Officials

A NEW campaign to rid the highways of persons who are unfit to drive automobiles has been announced. The National Bureau of Casualty and Surety Underwriters, of New York City, states that in future the leading casualty and surety companies of the United States will work in hearty cooperation with state motor vehicle commissioners in a war on unfit drivers. Hereafter, when licenses have been denied automobilists, or when the right to drive has been revoked by duly authorized public officials, those persons will be unable to obtain automobile insurance through any of the companies in the National Bureau of Casualty and Surety Underwriters.

The insurance companies in the Bureau have established a working agreement with the motor vehicle commissioners in sixteen states. These officials under the new management will furnish immediately the names of all persons whose licenses have been revoked. The information thus obtained is disseminated among the Bureau companies, who immediately mark their records so as to deny insurance to these motorists in case they should be requested to issue policies for them. Furthermore, if it is found that insurance is already in effect for motorists whose licenses have subsequently been revoked, that insurance is immediately canceled.

It is an established fact, say the Bureau officials, that many serious accidents are caused by criminal and careless motorists who continue to operate even after their licenses have been revoked for good cause. Insurance companies feel that they can assist the police officials in keeping these obnoxious drivers off the roads by refusing to grant them the right of financial protection in the event of accident.

Planning, Park, and Housing European Trip

THE Federated Societies on Planning and Parks, composed of The American Civic Association, the American Institute of Park Executives, The American Park Society, the National Conference on City Planning, and the National Conference on State Parks, is arranging for a party of twenty-five to attend the annual conference of the International Federation for Town and Country Planning and Garden Cities to be held September 13 and 14 in Vienna. The tour will include motor trips through England, Scotland, Holland, Belgium and France; train trips through Germany, Czecho-Slovakia, and Austria.

The party will sail on the *Andania* on July 31 and return on the *Suffren*, sailing from Havre on September 29 and landing in New York on October 7.

Further Data on Salary Increases of Municipal Officials

SEVERAL additional cities have reported increases in the salaries of mayors, city engineers, and city clerks, since the publication in THE AMERICAN CITY for March, 1926 (pages 288-290), of the tabulation of such salaries from the Census Bureau's report of financial statistics of cities for 1923. These increases are listed below:

	Salary Reported in 1923	Present Salary 1926
MAYORS		
Detroit, Mich.	$8,000	$15,000
Memphis, Tenn.	6,000	12,000
CITY ENGINEERS		
Jamestown, N. Y.	3,000	4,500
Joliet, Ill.	2,846	3,000
Roanoke, Va.	3,000	3,300
Waltham, Mass.	3,600	4,000
Wichita, Kans.	4,000	4,800
CITY CLERKS		
Nashville, Tenn.	3,000	3,300
Newton, Mass.	4,150	4,450
Poughkeepsie, N. Y.	2,500	3,000
San Diego, Calif.	3,000	3,300
San Jose, Calif.	2,160	2,700

Other increases with regard to which information was previously received are listed in the April number on page 441.

Cleveland's New Schedule

Through the courtesy of Jay Morton, Commissioner, City of Cleveland, Ohio, the following list has been received of the new salary schedule now in effect in Cleveland under the commission manager form of government:

	Per Year		Per Year
City Manager	$25,000	Mayor	$3,000
Directors	6,000	Councilmen	1,800
Commissioners	3,000	City Engineer	5,900
City Clerk	6,000	City Plan Engineer	5,500

In Cleveland, the directors, of whom there are seven, are heads of the city departments; the commissioners, of whom there are a number in each department, are heads of the subdivisions.

Should the City Engineer Do Consulting Work?

In commenting on the salaries of city engineers, P. L. Brockway, City Engineer of Wichita, Kans., writes:

"I know that the published salaries are entirely misleading in one way, in that many of the persons listed do considerable consulting work. I am persuaded that the practice is wrong from two standpoints. First, I cannot be convinced that it is ethically right for a municipal engineer to take advantage of the fact that he is not out anything for office rent or general overhead by competing with the actual consulting engineer who must maintain an organization.

"On the other hand, I am persuaded that the great majority of the cities listed have enough engineering work to more than fully occupy the executive head in the Engineering Department, and that he will be just as far along, within a few years at least, if he goes out of his way somewhat to take part in other phases of the city's activities beyond the mere engineering phases of his work."

Municipal Salaries Under the Changing Price Level

A pamphlet under the foregoing title has been published by the National Municipal League, 261 Broadway, New York City, as a supplement to the *National Municipal Review*, for March, 1926. The author is William C. Beyer, Director of the Bureau of Municipal Research of Philadelphia. The purpose of the pamphlet is to answer the question, whether the salaries of municipal employees have increased as rapidly as the cost of living and how the increases compare with those in other occupations.

The author summarizes his conclusions in part as follows:

"In summarizing our findings with reference to different classes of municipal workers, it seems fair to say that with the exception of unskilled laborers, patrolmen, hosemen, and laddermen, and a few other of the lower-paid groups, all classes have suffered a reduction in the purchasing power of their salaries during the last ten years; that the largest proportionate increases have gone to the lowest-paid employees, and the smallest proportionate increases have gone to the highest-paid employees; and that the scientific and professional classes, together with the higher officials, have fared relatively worse than other classes. . . .

"From these fragmentary comparisons of municipal workers with other groups, conclusions should be drawn only with the greatest caution. It seems reasonably safe, however, to assert that municipal workers in the larger cities have lagged behind public school teachers in pay increases; that they have not kept pace with the employees of the steam railways of the country; that they have been far outstripped by wage earners in private industry; and that salaried employees in municipal service probably have advanced more slowly in compensation than salaried employees in private service. . . .

"A high level of efficiency cannot be long maintained on a low level of compensation. If our city governments continue the policy of underpayment for a protracted period, the result is certain to be injurious to the efficiency of municipal government. For a time the loyal veterans who have been the mainstays of the service in the past

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will continue to serve the public the same as before, even though the purchasing power of their salaries has shrunk and their standard of living has been reduced. But that will not go on indefinitely. One by one the veterans will drop by the wayside and new appointees will take their places. And these new appointees will not be as capable as their predecessors. Thus gradually will the quality of the personnel deteriorate and the efficiency of the service be lowered. All that is needed to bring this about is the passage of time."

The author comments further:

"It is especially unfortunate that professional and scientific workers have been among the most neglected. Municipal service in the United States has suffered in the past from the fact that professional men and women were not admitted to it in sufficient numbers. Too much of the work that required the hand and brain of the trained specialist was left to the untrained layman. In recent years, to be sure, the tendency has been to make greater use of the professionally trained, but this tendency is sure to be checked if more liberal remuneration is not offered."

Items from Here and There

Citizens' Smoke Abatement League Organized in St. Louis

AS a result of a recent public meeting en- smoke abatement sponsored by the St. Louis Section, American Society of Mechanical Engineers, that city is now assured of one of the most determined campaigns in this direction that has yet been attempted. President W. A. Abbott of the Society and Dr. O. P. Hood of the U. S. Bureau of Mines were among the several prominent speakers who addressed this meeting, and the audience of nearly 300 became thoroughly aroused to the gravity of the situation.

There was immediately organized a Citizens' Smoke Committee, made up of representatives of over thirty leading civic and industrial organizations, with Mayor Victor J. Miller as ex-officio member.

This committee has in turn organized the Citizens Smoke Abatement League and has laid out an extensive program and means for carrying out the program. As an important adjunct to the research and educational work, a Smoke Abatement Exhibit will be opened at St. Louis in October, 1926. For this exhibit all the member organizations will contribute toward the erection of a large structure which will be fitted with all sorts of heating apparatus of the most approved "smokeless" types. The Public Affairs Committee of the St. Louis Section had an active part in laying out the program and will play a major part in its execution.

Proposed River-Front Improvement Visualized

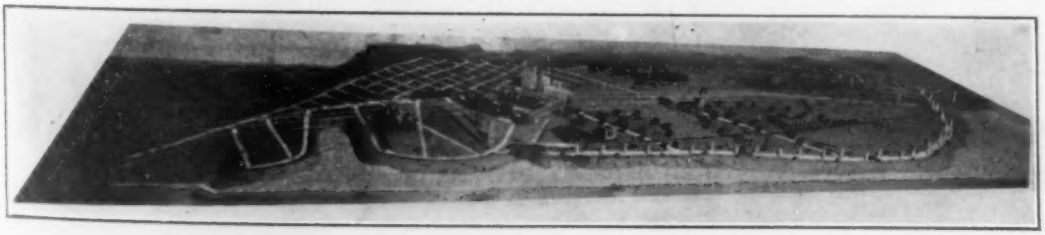
THE method—too little used as yet—of visualizing a proposed public improvement by means of a model, is being employed by City Manager C. E. Douglas and City Engineer Walter Cullen of Dubuque, Iowa.

When Manager Douglas resigned his post at Newport News, Va., and moved to the middle western city, he saw in the Mississippi River a potential factor for the development of all river cities. The improvement of the Dubuque river-front at once became a subject of interest. The Manager and the City Engineer outlined a general plan for this proposed improvement. The engineering department then set about to put this plan into visible form. A clay model of the entire river-front was made, and the proposed improvements added. These included the construction of a drive along the water-front, and the filling of tracts which are now sloughs, thus making them available as industrial sites.

The model was photographed and the photographs were displayed at the waterways convention at the Twin Cities recently. They were later placed on display at Dubuque. The accompanying illustration, which somewhat resembles an airplane view, was taken in a workshop of the Dubuque City Engineering Department.

Public Health Administration of Communities to Be Considered at American Health Congress

AMONG the many important features on the program of the American Health Congress, to be held at Atlantic City, May 17-22, one of the most purposeful will be the session on the afternoon of the 21st, when the American Public Health Association, the American Child Health Association, the National Organization for Public Health Nursing, and the Conference of State and Provincial Health Authorities of North America meet together to consider the public health administration of communities. Three plans for the health adminstration of cities will be described by the men who have developed them: Professor C.-E. A. Winslow, Dr. S. J. Crumbine, Dr. Murray P. Horwood, Dr. Harold H. Mitchel, Dr. B. Franklin Royer, Mr. Edward Stuart and Professor Ira V. Hiscock. A fourth health plan—for the county health organization—will be presented by Dr. Joseph W. Mountin, Director of



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Rural Sanitation, Board of Health, Jefferson City, Mo. Not only will these men describe their plans, but men and women engaged in health administration in all parts of the country will be present and enter into a free discussion which can do more toward the evolution of public health standards than years of individual uncompared work.

At the opening session of the American Child Health Association's annual meeting, held in conjunction with the Congress, one of the important addresses will be that by Secretary of Commerce Herbert Hoover, on the topic "Preventable Loss of Life." Subjects to be discussed at other sessions of the Congress will include "Light and Health," "Newer Methods for the Control of Infectious Diseases," "Venereal Disease," "The Industrial Pollution of Water," "Public Health Nursing," and many other problems of importance to municipal officials and public health workers. The complete program is obtainable from the National Health Council, 370 Seventh Avenue, New York.

Legislation Recommended by National Conference on City Planning

AMONG the resolutions adopted by the National Conference on City Planning, in session at St. Petersburg, Fla., March 31, 1926, was the following:

"Experience during the last year and discussions at the present Conference have emphasized, as never before, the fundamental importance of state enabling acts to effective city planning. Municipalities cannot avoid congestion, prevent misplaced streets, protect homes, provide safe and sufficient traffic facilities, and acquire adequate and permanent playgrounds without proper state legislation. We commend to the legislatures of the several states and to municipal officials and civic organizations interested in such legislation, the standard zoning enabling act prepared by the United States Department of Commerce, and the suggested model for a uniform vehicle code drafted by the Second National Conference on Street and Highway Safety. The adoption, under competent legal advice, of such legislation and of other needed enabling acts will make possible the more rational development of our cities and metropolitan regions and the saving to future generations of social and economic costs beyond all computation."

EDUCATION IN CITY AND REGIONAL PLANNING

At its West Palm Beach session on April 1, 1926, the following resolution was adopted by the Conference:

"Realizing that the destiny of community life of the future is dependent in large measure on the training in good citizenship of the youth of today, we respectfully suggest the importance of city and regional planning as a subject for inclusion in the curricula of secondary schools and comprehensive courses of at least a semester for undergraduates in the colleges. Through this means many young men and women would be inspired and guided to an intelligent and active interest in civic affairs and community leadership. We believe also that the colleges and technical and professional schools could render service of great value to the cause of civic progress by offering special courses for students who may wish to qualify for city and regional planning activities as their life work."

Municipal Bond Market

A Good Time for Cities to Sell Bonds

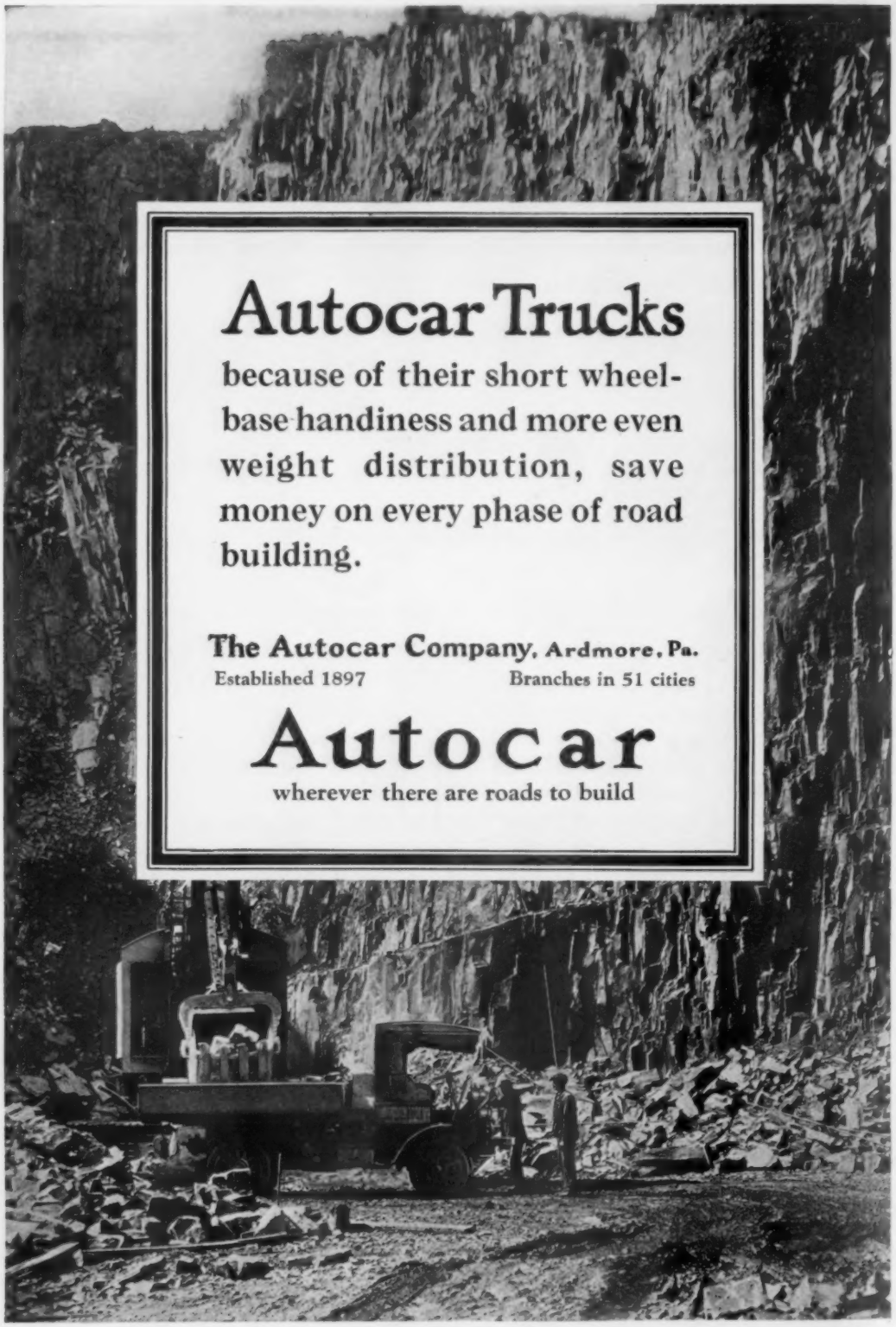
DURING the month of April, municipal bond prices reached the highest levels of the year. This was caused in a great measure by the growing scarcity of high-grade bonds on the market. The recent crash in the stock market and the deflation of the real estate and building boom has turned investors' interest to the bond market, particularly to municipals because of their inherent safety and stability, and is an important factor in the improving demand for conservative investment securities.

The largest municipal bond sale of the month was the $25,000,000 City of Philadelphia loan, which was sold at a net interest cost to the city of 4.28 per cent. Last December the same city floated an issue of bonds at a price which was equivalent to a net interest rate of 4.36 per cent.

This one sale was representative of the continued advancement of the entire market since the first of the year. Another important issue offered during the month, which was indicative of the general trend of prices, was the Missouri offering on April 14. The issue, which amounted to $7,500,000, was sold at a price to yield 4.15 per cent. This sale reflected a saving of 1/10 of 1 per cent in interest for a period of eighteen years in comparison with the cost of the last indebtedness incurred by the state.

The subjoined list includes the important issues of the month and is offered as a guide to municipal bond values in various sections of the United States:

Amount	Municipality	Maturity	Rate %	Net Yield %
$1,150,000	Quincy, Mass.	1927-1941	4	3.92
1,290,000	New Bedford, Mass.	1927-1946	4	3.94
1,000,000	Utica, N. Y.	1927-1946	4.10	4.08
1,000,000	St. Paul, Minn.	1956	4 & 4½	4.12
7,500,000	Missouri	1933-1943	4¼	4.15
5,000,000	Chicago, Ill., Sanitary Dist.	1927-1946	4	4.22
990,000	Cincinnati, O., City Sch. Dist.	1927-1951	4½	4.25
25,000,000	Philadelphia, Pa.	1976/1946	4¼ & 4½	4.28
1,413,000	Paterson, N. J.	1927-1930	4½	4.30
500,000	Long Beach, Calif.	1943-1947	4½	4.49
1,000,000	South Dakota	1931-1933	4½	4.50
625,000	Wilson Co., N. C.	1931-1955	4¾	4.57
500,000	Washington Subur. San. Dist., Md.	1976/56	4½	4.77
500,000	Alameda Co., Calif.	1946	5	4.78
1,524,000	Miami Beach, Fla.	1927-1946	5½-6	6.11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Municipal and Civic Publications

Prices do not include postage unless so stated

Water Purification Plants and Their Operation.—By Milton F. Stein, Sanitary Engineer. Third edition, revised and enlarged. John Wiley & Sons, Inc., New York. 1926. XIV + 316 pp. Illustrations, diagrams and tables. $3.00.

It was the author's purpose in first writing this book to make a manual containing the essential information which a filtration plant operator would require, plus enough matter of a more general nature to give the operator a proper perspective of his field of work and to guide him in a further quest for knowledge in his vocation. Adherence to this principle meant the discarding of considerable interesting, but non-essential matter from the original manuscript and careful weighing of the value of additions and alterations in the second and this, the third, edition. Of late years there have come into being theories and lines of thought in water purification practice which, while they have not as yet influenced the essentials, promise to do so in the near future and on which the intelligent operator should be informed. To preserve the unity of purpose of the book, this matter has been added in the form of a number of appendices. These cover the interpretation of bacteriological tests, the colloidal theory in water purification and hydrogen-ion concentration. Changes in the text have been made where current practices demand it and improvements in apparatus have been noted. This is a book which is considered as a "bible" by many water-works operators, and rightfully, because it is a thorough book containing the meat of the subject in a concise form.

A Selection of Cases on the Law of Municipal Corporations.—By Charles W. Tooke. Callaghan and Company, Chicago. 1926. XLIV + 1335 pp. $6.50.

Mr. Tooke is Professor of Law in Georgetown University, and his book consists of legal decisions selected for study and discussion by law students in the classroom. For this purpose it is admirable, covering not only the older branches of this subject, but, for the first time in such a collection, the newer developments, such as city planning generally, including cases on the establishment of the city plan, excess condemnation, zoning, and the regulation of billboards. To the practitioner in city planning and the student of civics, the book will be valuable on account of the inclusion of the latest cases on these subjects, and an admirable index. Altogether, it is the best collection of cases on Municipal Corporations yet to appear.

Newspapers in Community Service.—By Norman J. Radder, Assistant Professor of Journalism, Indiana University. McGraw-Hill Book Company, Inc., New York. 1926. X + 269 pp. $3.00.

The author has employed the trained newspaper man's method of telling the story first, and analyzing it elsewhere in his publication. Without lengthy preliminaries, he recounts at once the achievements of various newspapers along special lines of community service: Stimulating Civic Pride; Developing Parks and Playgrounds; Pointing the Way in Agriculture; Fostering Education and Entertainment; Housing and Health; In Behalf of Constructive Charity; The Editor as Crusader; Information and Advice; The Welfare of the Newsboy. Under each of these chapter heads many phases of work and many specific instances of newspaper leadership are given. Nearly every one of the chapters in Part I (Achievements) ends with a list headed "Start Something!" made up of definite suggestions based on what has already been done. Part II (Ideals and Methods) shows what "service" is, and how to formulate and carry out a service program. The appendices give lists of books and magazines on municipal problems. This book holds one's interest from the beginning because of the concrete evidence given as to the obligation and value of community service in journalism.

River Straightening, Chicago, Ill.—Report by Citizens Committee. 44 quarto pp., besides inserts of maps and tables. September 9, 1925. Covering estimated construction costs, land valuations, rearrangement of property lines, and ownerships before and after river straightening. (Apply to Municipal Reference Library, 1005 City Hall, Chicago, Ill. Send postage.)

The American Year Book: A Record of Events and Progress in the Year 1925.—Edited by Albert Bushnell Hart, LL.D.; Associate Editor, William M. Schuyler; edited with the cooperation of a supervisory board representing national learned societies. The Macmillan Company, New York. 1926. XXXV + 1158 pp. $7.50.

The eight divisions of the material surveyed in this volume are: Historical; American Government; Governmental Functions; Economics and Business; Social Conditions and Aims; Science Principles and Applications; The Humanities; Chronology and Necrology. The research work on which this presentation is based is carried on by the American Year Book Corporation, composed of fifty learned societies. The contributors number about 270. The information is prepared and arranged in such a way as to make it easily found and understood by the busy person, and at the same time to summarize for the expert the progress in which he is most interested, while offering through its bibliographies and its great scope the opportunity for wide study. It neglects no field of governmental, business, scientific, social, and intellectual advance, and throughout makes its information vital by connecting it with the work of individuals.

Disease Prevention.—By Herbert H. Waite, M. D., Professor of Bacteriology and Pathology, University of Nebraska. Thomas Y. Crowell Company, New York. 1926. X + 667 pp. $4.50.

The student of this volume will find an overwhelming collection of evidence as to the progress of knowledge which makes for life and health. Great are the attacking forces of disease, but with few exceptions, their sources and methods are now well understood, and intelligently dealt with. The book is not intended primarily for those who have had a medical or engineering education, but for public officials, social and hospital workers, students in educational institutions, and the laity in general, with the idea that a wider knowledge of disease-causes and of methods of prevention should belong to all of us, and that not many of us can go to original sources for information. Considerable established historical material is given, with information about promising experimental procedures. Diseases are classified as to the means of their transmission, and their clinical evidence is made plain, as a preliminary to the discussion of their prevention. Over a hundred pages are given to the chapter on the prevention of insect-borne diseases, and there is important material on the prevention of milk-borne, water-borne, and soil-borne diseases.

Outline of the Law of Municipal Corporations.—By Allen B. Flouton, Professor of Law, Brooklyn Law School. Published by the author, 305 Washington Street, Brooklyn, N. Y. 1926. XXVI + 239 pp. $3.00.

Mr. Flouton's book is a statement of the law of his chosen subject with special reference to New York State. In this age of specialization, textbooks devoted not only to the law of special subjects, but to that law as it exists in a special state, have been found necessary and are now numerous. While written for the classroom, the book will be useful to the practicing lawyer. The many new developments of the law of municipalities make such a book as this timely. It is a pity that among these recent developments excess condemnation is not taken up at all, and zoning, which has become so important, is treated so inadequately.

The Terre Haute Foundation.—A Plan for the Industrial Development of Terre Haute, Ind. Pocket size, 11 pp. The Foundation provides a means for the necessary financing of suitable enterprises, both those coming to Terre Haute and those already there which should be developed. This booklet explains the principles upon which the Foundation will operate. It will have a capital stock of one million dollars—20,000 shares of $50 each, the shares to be sold as generally as possible to the citizens of Terre Haute, so that the company shall be representative of the community. (Apply to the Foundation.)

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Survey of City and Regional Planning in the United States, 1925.—By Theodora Kimball Hubbard, Hon. Librarian, American City Planning Institute. 30 pp. in the April, 1926, issue of *City Planning*, official organ of the American City Planning Institute and the National Conference on City Planning. Illustrated. The careful grouping of items of progress under the various divisions of the subject, the sweep of view, and the definite characterizations and interpretations of what has been accomplished, make this survey most interesting and valuable. The divisions are as follows: International Interest; Notable Events; Educational Work; State Activities; Regional and Metropolitan Planning; Comprehensive Plan Reports; New Communities; Planning Unbuilt Areas; Zoning; Highways and Street Traffic; Transit, Transportation, and Port Development; Parks and Recreation; Civic Centers and Civic Art; Future Plans. 75 cents. (Apply to City Planning Publishing Co., 9 Park Street, Boston, Mass.)

Applied Municipal Sanitation.—By V. M. Ehlers, Chief Sanitary Engineer; E. G. Eggert, Sanitary Engineer; and Ella G. White, Secretary; of the Division of Sanitary Engineering, State Health Department, Austin, Texas. Published by the Texas Association of Sanitarians, Austin, Texas. 1925. XII + 167 pp. Illustrated. $1.50.

This is a non-technical textbook and a field book of reference for local health officials, public health nurses, sanitary workers, and others. The divisions of its discussion are: Water; Sewage Disposal, Mosquito Control; Milk Sanitation; Shellfish Protection; Camps, Parks, Swimming Pools; Problems of General Sanitation; and Educational Activities. It gives much practical information in a direct and definite way, with many illustrations, making the material of value not only within the state of Texas, but also to sanitarians elsewhere.

Crime and Its Cure.—The *Survey Graphic* for March 1, 1926, contains a group of articles on this subject. They are: Crime Waves and Crime Remedies, by George W. Kirchwey; The Sieve of Justice, by Raymond Moley; "Send Them Up"—to What? by Austin H. MacCormick; Does Punishment Pay? by Charles Platt; and Vengeance—or Vision, by Karl A. Menninger, M. D. The first article reviews the whole crime situation; the second studies what happens between the arrest and the sentencing of the criminal, and the relation of public opinion to the conduct of the courts. Professor MacCormick shows how what is going on in prisons affects the continuance of crime; Dr. Platt presents a study of probation and parole; and Dr. Menninger offers a psychiatrist's challenge to lawyers, jailers and politicians. 30 cents. (Apply to Survey Associates, Inc., 112 East 19th Street, New York.)

A Major System of Streets for Evansville, Ind.—This is the first of a series of city planning studies for Evansville, and has been issued by the City Plan Commission. Harland Bartholomew is the City Plan Engineer, and E. O. Mills and L. D. Tilton are his associates. 56 quarto pp. The main part of the report consists of a series of plates dealing with specific elements of the study, with facing pages of comment and explanation. The appendices give a list of major streets for Evansville and vicinity, with details; the rules of the City Plan Commission for the subdivision of land; suggested changes in street names within the city limits; and a synopsis of the Indiana City Planning Law. (Apply to the City Plan Commission.)

Living Conditions for Small-Wage Earners in Chicago.—By Elizabeth A. Hughes, Bureau of Social Surveys, Department of Public Welfare, Chicago, Ill. 1925. 62 pp. Illustrated. This is a study of the living conditions of the Negro and Mexican emigrants who have come to Chicago within the past few years to fill the gap in industry made by the lack of immigrants from Europe. Chicago needed these workers, but made no preparation for sanitary housing that was within their power to pay for. (Apply to Mary E. McDowell, Commissioner of Public Welfare.)

Technique of Planning Public Dinners.—An article under the title, "Dinner Is Served," in *Better Times* for March 1, 1926. It shows the technique which this publication has developed for managing its big annual party—how hotel arrangements are made and publicity planned, and the method of handling reservations and seating. Enlivening and practical. (Apply to *Better Times*, 100 Gold Street, New York.)

Communicable Diseases.—The October-November-December, 1925, issue of *The Commonwealth*, published by the Massachusetts Department of Public Health. Special Communicable Diseases Number. 30 pp. (Apply to George H. Bigelow, Commissioner of the Department, Boston, Mass.)

A Bibliography of Public Administration.—By Sarah Greer, Librarian of the National Institute of Public Administration and New York Bureau of Municipal Research. Published by the National Institute of Public Administration, New York. 1926. XIII + 238 pp. $2.00.

The chapter divisions of this important and up-to-date bibliography are as follows: General Administration; Political Parties and Elections; Civil Service and Employment Management. Public Finance; Public Works; Public Utilities; Public Health and Sanitation; Public Welfare; Public Safety and the Administration of Justice; Education. Each chapter contains many subdivisions, so that the framework of the book presents a clear analysis of the field. Few publications issued before 1915 have been included. A list is given of the more important surveys and administrative studies of the New York Bureau of Municipal Research, under the headings of Administrative Surveys—State and Municipal, Public Health Surveys, and Surveys of Police Departments.

Fundamentals of Highway Traffic Regulation.—By William Phelps Eno. Published by the Eno Foundation for Highway Traffic Regulation, Inc. 1926. VIII + 96 pp. This is the author's fourth book on highway traffic regulation. He sets forth the advantages of standardizing the General Highway Traffic Regulations for Vehicles, with Safety Rules for Pedestrians, which were adopted for standardization as a police code by the Council of National Defense in 1919 and have been revised to January 1, 1926. These regulations are included in the book. There is a discussion of the necessity of educating drivers, and the duties of the Traffic Bureau of a Police Department are presented. Penalties and traffic courts are briefly dealt with, and there is a section on licenses, permits, registrations, and vehicle lights. Part II describes all sorts of devices used as traffic guides, and comments on their operation and efficiency. Part III deals with Special Highway Traffic Regulation. It opposes the synchronized block system and advocates as a substitute rotary traffic, which is illustrated with many diagrams. Considerable space is also given to the subject of storing or garaging of dead vehicles on roadways, with diagrams. $3.00. (Apply to the Eno Foundation for Highway Traffic Regulation, Inc., Saugatuck, Conn.)

The Planning and Control of Outlying Shopping Centers.—By J. C. Nichols, developer of Country Club District, Kansas City. 6 quarto pp. in *The Journal of Land & Public Utility Economics* for January, 1926. Some of the principles suggested are within the scope of city planning and zoning authorities; others may be the standards of real estate dealers who are building or guiding the layout of additions to city areas. They all make for civic beauty and economic planning of land. $1.25. (Apply to A. W. Shaw Company, Cass, Huron and Erie Streets, Chicago, Ill.)

The City Plan of Kenosha, Wis.—Submitted by Harland Bartholomew, City Plan Engineer, and his associates, to the City Council, City Planning Commission, and City Manager, November 11, 1925. An elaborate report of 112 quarto pp. with many views, plans, maps, and charts, presenting a complete and comprehensive city plan. Several features of it have been operative for some time. The civic center is more than half completed, and much progress has been made in connection with the major street plan. (Apply to Harland Bartholomew, Compton Building, St. Louis, Mo.)

Renovation in Swimming Pool Control.—By W. D. Stovall, M. D., Fellow A. P. H. A., M. Starr Nichols, and Vera E. Vincent, of the Laboratory of Hygiene, Wisconsin State Board of Health, Madison, Wis. 7 pp. in the March, 1926, issue of the *American Journal of Public Health*. Illustrated. The problems considered are: the use of a chemical disinfectant which will not only produce primary sterilization, but which can be added in such quantity that a residue is left which acts as a continuous disinfectant and maintains a water in the pool of as good quality as drinking water; the finding of some simple, easily applied determination which can be used as a control test to replace the more lengthy bacteriological tests now used. (Apply to the American Public Health Association, 370 Seventh Avenue, New York.)

Official Facts Concerning Your Taxes.—Issued by P. J. Carr, County Treasurer, Cook County, Ill. 6-page folder giving important facts concerning the assessing and collecting of taxes, which if acted upon will be to the convenience and financial benefit of the taxpayers of the county. (Apply to the County Treasurer, Chicago, Ill.)

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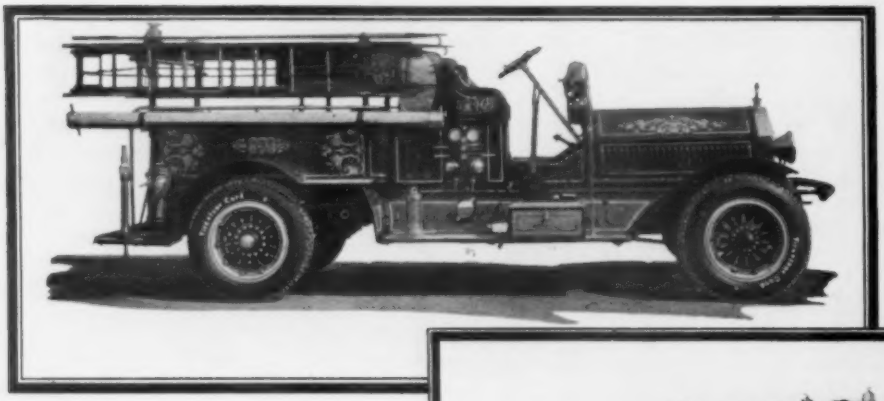

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North Carolina Section, American Water Works Association.—Proceedings of the Fifth Annual Meeting and Third Water Purification Conference, held in Asheville, N. C., September 13-15, 1925. 176 pp. Map of the public water-supplies of North Carolina. A verbatim account of the convention, with valuable discussion. This is Volume 3, Number 1, of the *Journal* of the North Carolina Section. (Apply to Earle G. McConnell, Chairman, Publications Committee, Mees & Mees, 616 Johnston Building, Charlotte, N. C.)

Pension Systems for Municipal Employees.—By Clifton E. Hickok, City Manager, Alameda, Calif. 4 pp. in the February, 1926, issue of the *City Manager Magazine*. A paper read before the last convention of the League of California Municipalities, at Long Beach, Calif. A review of pension systems in general and of Alameda's experience, emphasizing the necessity of basing pension systems on actuarial advice rather than the interests of a group. (Apply to the magazine, Lawrence, Kans.)

Conditions of Municipal Employment in Chicago.—By Leonard D. White. A Study in Morale. Submitted to the City Council of Chicago June 10, 1925. The study was made possible by the aid of research funds provided by the University of Chicago, through the Committee on Local Community Research. 114 pp. The scope of the inquiry and its findings are given in the preface in condensed form and are definite, practical, and stimulating. The whole report has a value beyond its local application, in its analysis of conditions and recommendations. (Apply to Al. F. Gorman, City Clerk.)

Drinking Water, Sewage and Health.—A 4-page quarto folder issued by the Lake Michigan Sanitation Congress, 9119 Commercial Avenue, Chicago, Ill. (Major Henry W. Lee, President.) Giving the opinions of a number of civic leaders as to the dangers of making open sewers out of our waterways, together with quotations from several newspapers on the subject. (Apply to the Congress.)

Industrial Survey of Punxsutawney, Pa.—Report of a survey made by the Punxsutawney Board of Trade, and compiled by the Secretary of the Board, T. C. Carrington. October, 1925. 18 pp. A presentation of the natural resources, the advantages, and facilities of the place as affecting the operation of industry. (Apply to the Board.)

Parks as Investments.—A little park history in support of the program of city park and parkway extensions proposed by the Metropolitan Conference of City and State Park Authorities, and published with the cooperation of the New York State Association through its Committee on State Park Plan. 8 pp. Illustrated. "The proposed extensions will add 6,000 acres, almost two-thirds of the present area in parks, parkways and playgrounds, and will bring the total to 7¾ per cent of the area of the city—inadequate, but at least as much as this generation can do to make up for the neglect of the past." (Apply to the Department of Parks, Arsenal, Central Park, New York.)

Municipal Regulation of Fortune Telling.—By Lorna L. Lewis, Assistant and Librarian, Municipal Information Bureau, University Extension Division, University of Wisconsin, Madison, Wis. Information Report No. 46, January, 1926. 12 mimeographed pp. Some cities prohibit fortune telling as involving a serious problem and sometimes disastrous consequences; other cities license clairvoyants, with the idea of discouraging the practice. Thirty-five cities are classified in the tables given in this report, as to their regulation of fortune telling, and typical ordinances are given in full. (Apply to Ford H. MacGregor, Chief of the Bureau.)

Civic Committee, Lowell Chamber of Commerce, Lowell, Mass.—Report of the Committee for the year 1925. 32 pp. Charts, tables. The Committee was initiated by the Chamber of Commerce in February, 1925, for the purpose of studying the problem of increasing taxation, which is considered a serious handicap to the city's industrial development. The findings and recommendations have been approved by the Board of Directors of the Chamber, and steps are being taken to make the report effective. (Apply to the Chamber.)

Financial Statistics of Cities of 30,000 Population and Over: 1924.—A summary of 248 cities as to their assessed valuation of property, levies of general property taxes, total revenues, governmental-cost payments, and net debt. Tables. 21 pp. (Apply to the Bureau of the Census, Department of Commerce, Washington, D. C.)

International Association of Street Sanitation Officials.—Report of the Proceedings of the Sixth Annual Conference of the Association, held in Chicago January 11 and 12, 1926. 31 pp. (Apply to the Secretary of the Association, A. M. Anderson, 10 South LaSalle Street, Chicago, Ill.)

Report of a Study of Highway Traffic and the Highway System of Cook County, Illinois.—By the United States Bureau of Public Roads and the Cook County Highway Department, 1925. 96 quarto pp. besides folded map inserts. Other maps, and views and tables. The conclusions are based upon the present density, type, loading and distribution of traffic units on the highways in the area, upon present population and population trends, upon predicted future traffic, and upon an economic and physical analysis of other factors affecting a highway improvement program. (Apply to the Municipal Reference Library, 1005 City Hall, Chicago, Ill. Send postage.)

Rural Hospitals.—By Wayne C. Nason, Assistant Economic Analyst, Bureau of Agricultural Economics, U. S. Department of Agriculture. Farmers' Bulletin No. 1485. 46 pp. Illustrated. March, 1926. In 1908, 60 per cent of the counties of the United States were without hospitals. County-tax, or public, community, township, or district hospitals were unknown. In 1909, Iowa took the lead in securing county public general hospitals, and since then rural community hospitals have become common. This pamphlet tells how such hospitals are secured and administered, and what they cost. 10 cents. (Apply to Government Printing Office, Washington, D. C.)

Minnesota Electric Rates.—Compiled by Esther Crandall, Librarian, Municipal Reference Bureau, University of Minnesota Library, Minneapolis, Minn. February, 1926. Publication No. 7 of the League of Minnesota Municipalities. 35 pp. $1. The rates compiled are as of January 1, 1926, and were obtained directly from the municipalities and the power companies operating plants in the state; they were also verified by the original sources of the information. (Apply to the League, at the University.)

The School as the People's Clubhouse.—By Harold O. Berg, Director of the Cleveland Recreation Council. Physical Education Series No. 6, U. S. Bureau of Education, Washington, D. C. 1925. 16 pp. Illustrated. Many states have made the provision and supervision of civic, recreational, and social activities in the schools optional with the local boards of education. By a small expenditure of money the schools can be made the focal points of civic and community life. It is cheaper to enlarge school playgrounds than to buy new sites to be used for playgrounds only. 5 cents. (Apply to Government Printing Office, Washington, D. C.)

Salaries of High School Principals and City Superintendents of Schools in Wisconsin Cities.—Compiled by Lorna L. Lewis. Information Report No. 47, February, 1926, published by the Municipal Information Bureau of the University Extension Division, University of Wisconsin, Madison, Wis. 6 mimeographed pp. The salaries are understood to be those of the year 1924-1925, but it is possible that in a few cases the salaries for 1925-1926 were given. (Apply to Ford H. MacGregor, Chief of the Bureau.)

Americanization Bureau, Service Citizens of Delaware.—Report for 1924-1925. Bulletin of the Service Citizens of Delaware, January, 1926. Prepared by Grace D. Brewer, Director of the Bureau. There is a Foreword (March 8, 1926) by Hugh M. Morris, United States District Judge, District of Delaware, expressing appreciation of the ideals and achievements of those who are working for the improvement of social conditions in Delaware. The report presents in an interesting way the work which the Bureau is doing for emigrants. 94 pp. Illustrated. (Apply to Delaware Americanization Committee, 2 East Ninth Street, Wilmington, Del.)

Reports Received

BOSTON, MASS.—Annual Report, Public Works Department, 1924

CHICAGO, ILL.—The Fire Department Ordinance of the City; Rules and Regulations of the Fire Department, 1925

HERKIMER, N. Y.—Annual Report, Municipal Commission, year ended, February 28, 1925

HOISINGTON, KANS.—Annual Report of the City, 1925

HOUSTON, TEXAS.—Annual Report, Police Department, 1925

LOS ANGELES, CALIF.—Annual Message of Mayor, January 4, 1926

MULTNOMAH COUNTY, ORE.—Budget Facts and Financial Statistics, 1926

PONTIAC, MICH.—Annual Report, City Manager, 1925

PORTLAND, ORE.—Annual Report, Bureau of Records, 1925

SAN DIEGO, CALIF.—Annual Report, City Auditor, 1925

SIOUX FALLS, S. DAK.—Information Book, Light Department, 1925

WESTERLY, R. I.—Annual Reports of the Town, 1925

Coming! the summer thirst

—that's the time when the parks and playgrounds become crowded — that's when Rundle-Spence Vertico-Slant "health bubblers" are needed most. Every city should be equipped to meet the summer thirst.

No matter how many people drink from R-S Vertico-Slant Fountains — everyone must drink sanitarily. The R-S nozzle enforces sanitation and cleanliness. The contamination of lip-contact is positively prevented.

The R-S line includes Sanitary Drinking Fountains, Bath and Plumbing Fixtures and Supplies. Write for catalog with prices, specifications, and complete information.

RUNDLE-SPENCE MFG. CO.
53 Fourth St. Milwaukee, Wis.

RUNDLE-SPENCE

Convenience

THE first Hotel from any railroad terminal in Cleveland is Hotel Cleveland.

All the important trolley and bus lines have terminal loops at the Public Square.

Facing the Public Square, Hotel Cleveland is within sight of all the large banks, brokerage offices, public buildings and department stores.

From a comfortable room at Hotel Cleveland, you can reach any part of the city with the utmost convenience.

Room Rates begin at $3.00 (with bath)

Hotel Cleveland
PUBLIC SQUARE CLEVELAND

Send for New Illustrated Booklet showing advantages of Hotel Cleveland for Conventions.

On the Calendar of Conventions

MAY 10-13.—ATLANTIC CITY, N. J.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 40 Central Street, Boston, Mass.

MAY 11.—WASHINGTON, D. C.
National Association of Commercial Organization Secretaries. Midyear meeting. Secretary-Treasurer, Walter O. Lochner, Chamber of Commerce, Trenton, N. J.

MAY 11-13.—WASHINGTON, D. C.
Chamber of Commerce of the United States of America. Fourteenth annual meeting. Secretary, D. A. Skinner, 1615 H Street, N. W., Washington, D. C.

MAY 12-15.—NEWARK, N. J.
American Physical Education Association. Annual convention. Secretary, Dr. J. H. McCurdy, Box G, Highland Station, Springfield, Mass.

MAY 13-14.—CAMBRIDGE, MASS.
Massachusetts Highway Association. Open-Air Road Building Machinery and Equipment Show. Secretary, John M. McCarthy, Natick, Mass.

MAY 13-15.—WASHINGTON, D. C.
Southern Commercial Secretaries Association. Annual meeting. Secretary, B. S. Barker, Atlanta, Ga.

WEEK OF MAY 17.—ATLANTIC CITY, N. J.
American Health Congress. Address: Sally Durham Hanshue, Secretary, Committee on General Arrangements, National Health Council, 370 Seventh Avenue, New York.

MAY 17-20.—NEW YORK.
American Association of Museums. Annual convention. Executive Secretary, Laurence Vail Coleman, 2 West 46th Street, New York.

MAY 17-21.—ATLANTIC CITY, N. J.
National Electric Light Association. Annual convention and exhibition. Secretary, A. Jackson Marshall, 29 West 39th Street, New York.

MAY 23-26.—CLEVELAND, OHIO.
International Association of Policewomen. Annual meeting. President, Mrs. Mina C. Van Winkle, 420 Evening Star Building, Washington, D. C.

MAY 24-25.—WASHINGTON D. C.
Conference of State and Territorial Health Authorities. Address: United States Public Health Service, Washington, D. C.

MAY 24-JUNE 5.—ATLANTIC CITY, N. J.
General Federation of Women's Clubs. Biennial convention. General headquarters, 1734 N Street N. W., Washington, D. C.

MAY 25-26.—CORPUS CHRISTI, TEXAS.
League of Texas Municipalities. Annual convention. Executive Secretary, Harvey W. Draper, 815½ Capitol Avenue, Houston, Texas.

MAY 26-JUNE 3.—CLEVELAND OHIO.
National Conference of Social Work (Secretary, William H. Parker, 25 East 9th Street, Cincinnati, Ohio), and allied organizations such as *American Association of Social Workers, American Association for Community Organization,* and *American Association of Hospital Social Workers. Annual conference.*

JUNE 3-5—WILLIAMSPORT, PA.
Pennsylvania Commercial Secretaries Association. Midyear meeting. Secretary-Treasurer, Raymond Woodrum, Chamber of Commerce, Norristown, Pa.

JUNE 5-7.—BUFFALO, N. Y.
Conference of State Sanitary Engineers. Annual meeting. Secretary-Treasurer, Arthur P. Miller, Assistant Sanitary Engineer, U. S. Public Health Service, Washington, D. C.

JUNE 7-11.—BUFFALO, N. Y.
American Water Works Association. Annual meeting. Secretary, Beekman C. Little, 43 City Hall, Rochester, N. Y.

JUNE 8-11.—TULSA, OKLA.
National Association of Real Estate Boards. Annual convention. Executive Secretary, Herbert U. Nelson, 310 South Michigan Avenue, Chicago, Ill.

JUNE 9-12.—LOS ANGELES, CALIF.
National Association of Purchasing Agents. Annual convention and Informashow. Secretary, W. L. Chandler, Woolworth Building, New York.

JUNE 12-18.—PHILADELPHIA, PA.
American Association of Engineers. Annual convention. Acting Secretary, Miss M. E. McIver, 63 East Adams Street, Chicago, Ill.

JUNE 13-18.—ON BOARD S. S. RICHELIEU, MONTREAL TO HA! HA! BAY
Union of Municipalities of the Province of Quebec. Annual convention. Secretary, R. Prieur, 326 Transportation Building, Montreal, Que.

JUNE 14-16.—HOT SPRINGS, ARK.
National Conference on State Parks. Annual meeting. Secretary, Beatrice M. Ward, 905 Union Trust Building, Washington, D. C.

JUNE 16-18.—SCHENECTADY, N. Y.
Conference of Mayors and Other City Officials of the State of New York. Annual conference. Secretary, William P. Capes, City Hall, Albany, N. Y.

JUNE 21-JUNE 25.—ATLANTIC CITY, N. J.
American Society for Testing Materials. Annual meeting. Secretary, C. L. Warwick, 1315 Spruce Street, Philadelphia, Pa.

JUNE 22-24.—VIRGINIA, MINN.
League of Minnesota Municipalities. Annual meeting. Executive Secretary, Morris B. Lambie, University of Minnesota Library, Minneapolis, Minn.

JUNE 22-24.—MANCHESTER N. H.
New England Association of Fire Chiefs. Annual convention. Secretary, Chief John W. O'Hearn, Watertown, Mass.

JUNE 28-JULY 1.—SAN FRANCISCO, CALIF.
American Society of Mechanical Engineers. Spring meeting. Secretary, Calvin W. Rice, 29 West 39th Street, New York.

JUNE 28-JULY 1.—MILWAUKEE, WIS.
Smoke Prevention Association. Annual convention. Secretary, Frank A. Chambers, Room 1411, City Hall, Chicago, Ill.

JULY 14-16.—SEATTLE, WASH.
American Society of Civil Engineers. Summer meeting. Secretary, George T. Seabury, 33 West 39th Street, New York.

JULY 19-22.—CHICAGO ILL.
International Association of Chiefs of Police. Annual convention. Secretary, George Black, Chief of Police, Wilmington, Del.

JULY 20-22.—KANSAS CITY, MO.
National Association of Comptrollers and Accounting Officers. Annual meeting. Secretary, Mark M. Foote, Comptroller's Office, 501 City Hall, Chicago, Ill.

JULY 26-28.—CHEYENNE, WYO.
Governors' Conference. Annual conference. Secretary, Cary A. Hardee, Live Oak, Fla.

AUGUST 16-28.—EVANSTON, ILL.
National School for Commercial and Trade Executives. Address: John N. Van der Vries, Chamber of Commerce of the United States, 801 Otis Building, Chicago, Ill.

SEPTEMBER.—VIENNA, AUSTRIA
International Conference on Housing and Town Planning. Address: H. Chapman, Organizing Secretary, International Federation for Town and Country Planning and Garden Cities, 3 Gray's Inn Place, London, W. C. 1, England.

SEPTEMBER 6-13.—MILAN, ITALY.
International Road Congress. Secretary General, M. Le Gavrian, Permanent International Association of Road Congresses, 1 Avenue d'Iena, Paris, France.

SEPTEMBER 21-24.—ASHEVILLE, N. C.
International Association of Municipal Electricians. Annual convention. Secretary, Erwin H. Benz, Municipal Building, West New York, N. J.

OCTOBER 11-14.—BUFFALO, N. Y.
American Public Health Association. Annual meeting. Secretary, Homer N. Calver, 370 Seventh Avenue, New York.

OCTOBER 19-22.—NEW ORLEANS LA.
International Association of Fire Engineers. Annual convention. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 24-27.—PITTSBURGH, PA.
National Association of Commercial Organization Secretaries. Annual meeting. Secretary, James J. Mulcahey, City Hall, Yonkers, N. Y.

OCTOBER 25-28.—HOUSTON, TEXAS
American Institute of Park Executives. Annual convention. Executive Secretary, Will O. Doolittle, Box 432, Rockford, Ill.

OCTOBER 25-29.—DETROIT MICH.
National Safety Council. Annual Safety Congress. Managing Director, W. H. Cameron, 168 North Michigan Avenue, Chicago, Ill.

NOVEMBER 8-12.—WASHINGTON D. C.
American Society for Municipal Improvements. Annual convention. Secretary, C. W. S. Samelman, 3817 Olive Street, St. Louis, Mo.

The Lycoming Hotel, Williamsport, Pa.

Wm. S. Milliner, Secy. Chamber of Commerce Williamsport, Pa.

$300,000 From Tourists in 1925!

"The value of The Lycoming Hotel to Williamsport can definitely be measured in dollars and cents. Tourists alone, last year brought us $300,000 of outside money because of our excellent hotel facilities," says Wm. S. Milliner, Sec'y of the Williamsport, Pa., Chamber of Commerce.

Of course The Lycoming, one of Pennsylvania's most favorably known hotels, was Hockenbury financed.

Travelers today demand the best in hotel facilities. If they aren't available in your town, these travelers pass on to the next town, spending there the money that should have gone to your merchants. Thus, you pay for a new hotel in lost profits!

Last year alone, the Hockenbury organization financed 31 community built hotels in all parts of the country. The same can be done for your community.

THE FINANCIALIST, a journal of community hotel financing, will be sent gratis. Ask that your name be placed on complimentary American City list 'A-5"—no obligations are entailed! It may mean a modern hotel for your city!

The HOCKENBURY SYSTEM Inc.

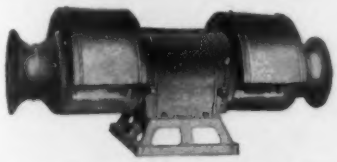
HARRISBURG **PENNSYLVANIA**

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A Code Siren for Fire-Alarm Service

An electric siren which is equipped with sound intensifiers, screens to keep out birds and foreign matter, and is practically weather-proof, has been developed for use with a fire-alarm code by the Sterling Siren Fire Alarm Company, Rochester, N. Y. This code siren is operated by a special type of code motor giving it rapid acceleration and yet the sound is stopped abruptly. The blast must not be a gradual dying down of sound, but must be cut off instantly as with a steam whistle to be effective. The Sterling code siren is equipped with a large combination electro-mechanical brake to provide the instant stopping. This brake, while built under exclusive Sterling patents, is designed along the lines of brakes used on high-speed passenger elevators and is just as reliable and effective, according to the manufacturers.



A STERLING FIRE-ALARM SIREN

The method employed to blow codes with the Sterling siren does not put any extra load on the motor, for when the siren is being stopped the power to the motor is shut off. This action is positively controlled by an automatic governor, setting up less strain than stopping the motor by phase changing or reversing the flow of electric current.

There are three ways in which numbers can be blown with this code siren. First, manually, by using a hand switch by which the blast of the siren is blown by closing the switch, and the sound instantly stopped by throwing the switch lever to the reverse position. This operation is repeated as many times as is necessary, according to the code number that is being blown. When not being used, the lever of the switch is left in neutral position. With this system the only equipment required is the code siren and the hand switch. Second, the code may be blown by using a central station transmitter. This semi-automatic system is used where an operator is on duty all the time, either a telephone operator or a central station man. The alarm is received over the telephone, and the operator selects the code wheel representing the district where the fire is located, places it in the transmitter and pulls the lever, and the code or district number is blown two rounds.

The third method, or full automatic system, provides for the equipment of the community with a high-grade type of fire-alarm box. Any one can send in the alarm of fire from any box in the system. To do so it is necessary only to break the glass door and pull the lever. Each box blows its own number twice. Any number of boxes may be used, and all operate through a single loop system, which greatly lowers the cost of wiring. No batteries are required.

Two Cities to Equip with Ahrens-Fox Engines

Hamilton, Ohio, has placed an order with the Ahrens-Fox Fire Engine Company, Cincinnati, Ohio, according to John P. Ahrens, Vice-President, for two 1,000-gallon pumpers and one 750-gallon pumper, while Charleston, S. C., has purchased two triple-combination pumping engines of 750 gallons per minute capacity each.

Goulds Pumps, Incorporated

Effective April 1, 1926, The Goulds Manufacturing Company, Seneca Falls, N. Y., changed its name to Goulds Pumps, Inc. In 1869, when the company was incorporated as the Goulds Manufacturing Company, it built a wide variety of products, but today it builds Goulds pumps solely. It was considered an advantage to link the product and corporate name, so it has been changed to Goulds Pumps, Inc. There is no change in organization, business policy, or ownership. The Board of Directors, officers, managers, and personnel remain the same.

Special Train to A. W. W. A. Buffalo Meeting

Arrangements have been made for a special train leaving the Pennsylvania Station, New York, at 8:50 A.M., Eastern Standard time, Sunday, June 6, via the Lehigh Valley Railroad, and arriving in Buffalo at 7:55 P.M., for American Water Works Association members in the New York territory. Further information may be secured from the Chairman of the Transportation Committee of the Association, Walter H. Van Winkle, 50 Church Street, New York, or from the other committee members: W. E. Cox, Neptune Meter Company, 565 West Washington Boulevard, Chicago, Ill.; T. C. Clifford, Pittsburgh Meter Company, 7800 Susquehanna Street, Pittsburgh, Pa.; Stephen H. Taylor, Superintendent, New Bedford Water Department, New Bedford, Mass.; Joseph W. Ivy, American Cast Iron Pipe Company, 1715-1717 Scaritt Building, Kansas City, Mo.; H. M. Lofton, Columbian Iron Works, Chattanooga, Tenn.; Fred W. Schultz, 441 Lexington Avenue, New York; or C. R. Knowles, General Superintendent, Illinois Central Railroad Company, Chicago, Ill.

Members going to Buffalo other than from New York City should apply to the committeeman nearest to them to determine the special arrangements which have been made for that district.

Texas	264	Louisiana	88	Connecticut	18
Michigan	260	Tennessee	77	Mississippi	17
Nebraska	254	Iowa	74	South Carolina	17
Florida	242	Illinois	69	West Virginia	17
Massachusetts	235	Oregon	58	South Dakota	17
Ohio	196	Indiana	55	Arkansas	16
Wisconsin	186	Montana	46	Kansas	16
New York	176	North Carolina	36	Maryland	16
Minnesota	160	Oklahoma	35	Delaware	16
Pennsylvania	159	Kentucky	34	Maine	12
Missouri	119	Utah	28	New Hampshire	12
Georgia	113	Alabama	26	North Dakota	12
California	109	Colorado	26	Vermont	6
New Jersey	106	Wyoming	22	New Mexico	6
Virginia	101	Idaho	19	Nevada	5
Washington	94	Arizona	18	D. C.	4

CANADA (Ontario . 94 — Manitoba . 49 — Quebec . 1) 144

The National Roll Call of Wehr Fordson Highway Patrol

The high opinion in which the Wehr One Man Fordson Powered Grader and Scarifier is held by highway experts everywhere is conclusively evidenced by this roll call of states now Wehr Fordson highway patrolled.

From Texas to Canada, from Maine to California, a stupendous road mileage is made better and kept better because of the inherently correct design, strong, rugged construction and highly efficient and low cost performance of the Wehr.

Operating in all climates, in all seasons and under every conceivable condition, these 4000 Wehr Graders are effectively cutting road building and road mending costs a full 75%.

This great saving is made possible by the fact that with the Wehr Fordson Highway Patrol, twenty miles of road can be maintained in first-class shape for no greater cost than that required to maintain only five miles with drawn type equipment.

It is for this reason, and because of the proved results obtained with Wehr by Nebraska townships and counties, that the Nebraska State Highway Department has just purchased 77 Wehrs, which places this state in third position in the Wehr roll call.

To individual contractors, town, city, county and state highway commissioners, the Wehr story of results is an interesting one. Write for it.

WEHR COMPANY

532 30th Street Milwaukee, Wis.

WEHR GRADER and SCARIFIER

The Original One Man Fordson Powered

A Snow Loader That Cleans the Road at 15 Miles per Hour

Engineers and street-cleaning departments in the snow belt are practically unanimous in their agreement that snow must be removed from city streets as quickly as possible before it turns to blue ice and requires pick and shovel for removal. Frequently, however, it is impossible to do this before the major portion of the snow turns to white snow ice. The Fox Snow Loader, 2 Lombardy Street, Newark, N. J., has been developed for handling this white snow ice. This machine, which is mounted on a 4-wheel truck, grinds up the snow by means of its front paddles, which travel at a rate of 100 revolutions per minute and are 30 inches in diameter, cutting a swath 72 inches wide and pushing the snow to the center and onto the escalator, which carries it up and delivers it to a truck through a swiveled chute.

The Fox snow loader has been built primarily for snow work, but can be used for loading ashes, gravel, and sand the same as other machines, if desired. The Pennsylvania Highway Department has used these machines in opening up roads, for by operating them at about 12 miles an hour, snow to within ½-inch of the surface of the road can be cleaned off and thrown to the side of the road by the swivel chute, thus speedily opening one traffic lane. On the return trip, another lane can be opened, which is sufficient to open most highways. On city streets quick work can be done by using the loader simply to throw the snow to the side of the street and then, on the last trip when the snow has been piled in the gutter, running down the gutter slowly and loading into a line of waiting trucks. According to the Harrisburg Highway Commission, 124 trucks were loaded and removed in 80 minutes, including all of the waiting time. It was estimated that 600 cubic yards of snow were taken away.

The elevator or escalator can be raised or lowered in 9 seconds, thus making it possible to move the machine quickly through restricted spaces. When the elevator is raised, the lower end of the chute is 9 feet 6 inches from the ground, and when the elevator is lowered, the height over all is 9 feet 6 inches. The escalator is 28 feet long, 30 inches wide, and 18 feet deep, and travels at the rate of 170 feet per minute. All the operations are controlled by the driver from his seat. The machine operates at a speed of from ½ to 15 miles per hour, is driven by a Buda 6-cylinder motor, developing about 90 horse-power, and has a Brown-Lipe 7-speed transmission. It is equipped with Hyatt roller bearings throughout.

THE FOX SNOW LOADER IN VARIOUS POSES

Top left.—Escalator lowered to pass under bridges and other obstructions. Top right.—Escalator raised and chute arranged to throw snow to one side. Bottom left.—Front of machine, showing saw-tooth cutters which push snow to center for raising by escalator. Bottom right.—The loader tackling a pile of frozen snow

13 years are as yesterday

so far as the paving on Margret Street, Flint, Michigan, is concerned. The photograph shows that the Trinidad Native-Lake Asphalt laid in 1913 is in a splendid state of preservation —*and with practically no expense for maintenance.*

Trinidad being a product of nature withstands the changing weather conditions and resists wear in a way impossible with artificially-produced asphalts. Service tests have proved Trinidad streets to be long lasting, resilient, easy to clean and repair, free from noise, and low in maintenance cost.

Another of our products—Bermudez Road Asphalt—is best adapted to the needs of road building. Write for interesting data.

The Barber Asphalt Company

Philadelphia

New York Chicago Pittsburgh St. Louis Kansas City San Francisco

TRINIDAD LAKE ASPHALT

DOBBIE SULKY DERRICK HANDLING PIPE

Sulky Derricks for Water-Works

The sulky derrick which is used so frequently in water-works construction and for the laying of sewer pipe derives its name from the fact that it can be thrown out of gear and transported on its own wheels. These wheels are fixed on the crank-shaft, and in the operation of the derrick take the place of a crank handle. The use of the wheels in hoisting the load is more convenient and rapid than the use of the crank handle and raises a greater load because of the increased leverage. In the sulky derrick manufactured by the Dobbie Foundry & Machine Co., Niagara Falls, N. Y., a simple brake is applied to the face of one wheel for lowering. The frames of these machines are made from spruce timber, combining light weight with the greatest comparative strength. The derricks are made for almost any capacities from 3,500 pounds to 10,000 pounds.

The machines themselves are light in weight and can easily be lifted along the trench by the workmen from length to length of the pipe as the work progresses.

New Street-Lighting Engineer

The Westinghouse Electric & Manufacturing Company, South Bend, Ind., has announced the promotion of A. L. Gottsche of the Street Lighting Section to Street Lighting Engineer, assigned to the Tampa office. Mr. Gottsche was graduated from the Mississippi A. & M. College in 1922 with a degree in Electrical Engineering. Since that time he has been with the Westinghouse Electric & Manufacturing Company.

Steel Curb and Gutter Forms in Florida

The Foundation Company, 120 Liberty Street, New York, recently ordered a carload of Heltzel steel curb and gutter and sidewalk forms for their work on the D. P. Davis properties, St. Augustine, Fla. The total award of the job is in excess of $8,000,000 and covers a contract for the building and physical development of Davis Shores.

The Foundation Company will pave the streets, lay the sidewalks, and build curbing, using steel forms made by the Heltzel Steel Form & Iron Co., Warren, Ohio, for this work. They will install water and gas mains, all sewage disposal drains, erect lighting fixtures, and put all power, light, and telephone wires in conduits, making them available for each lot owner at Davis Shores. There will be 44 miles of streets paved and 87.7 miles of sidewalks with the same amount of curbing. The streets will be 100, 80, and 60 feet in width, depending upon the amount of traffic for which they are designed.

Other Florida developments on which Heltzel steel forms are being used are the new city of Indrio just above Fort Pierce, Coral Gables, Seminole Estates, Pablo Beach, Venice, Jensen, and practically all the subdivisions in and around Jacksonville, St. Petersburg, Tampa, and Winter Haven, as well as at Clearwater, Lake Worth, Palm Beach, and West Palm Beach.

Water-Works Exhibits at Buffalo Convention

The usual extensive exhibits of water-works equipment and materials will be held in the Grand Ball Room of the Hotel Statler, the headquarters of the American Water Works Association Convention, to be held in Buffalo, June 7-11, 1926. Applications for exhibit space may be secured by members of the Water Works Manufacturers Association from J. E. O'Leary, Chairman, Exhibit Committee, Pittsburgh-Des Moines Steel Company, 30 Church Street, New York City.

Dewey Now General Manager of Wood Hoist

The Wood Hydraulic Hoist & Body Company, 7936 Riopelle Street, Detroit, Mich., has announced the appointment of Frank H. Dewey as General Manager of the company. Mr. Dewey has a wide technical and executive experience, and for several years prior to coming to Detroit was a designer for the United States Navy. His first connection in Detroit was with the Packard Motor Car Company, for which he organized a special equipment department of the truck division. Later he became Detroit representative of the Horizontal Hydraulic Hoist Company of Milwaukee, which company in 1920 was purchased by Gar Wood and the business moved to Detroit and absorbed by the Wood Hydraulic Hoist & Body Company. Since this time Mr. Dewey has been associated with the company, for several years in the capacity of Assistant General Manager.

Wherever Concrete Is Used

THE ADVANTAGES gained by employing a workability admixture in concrete are not confined to any one type of construction. Wherever strength, uniformity, water-tightness or finish of the final concrete are factors of importance an approved admixture readily pays its way—and more.

It improves the workability of the mixture, so that concrete of relatively dry consistencies can successfully be placed in intricate forms. It reduces the amount of manipulation necessary, effecting important savings of labor. It prevents segregation during handling and placing, even when central mixing is employed. It aids greatly in "gunning" and "chuting" concrete.

In a report of the Bureau of Standards' Engineers on "The Economic Value of Admixtures" the advantages of Celite are compared against other workability agents. May we send you a copy?

Address Celite Products Company, 11 Broadway, New York, or 53 West Jackson Blvd., Chicago, or 140 Spear Street, San Francisco.

CELITE

Insures Better Concrete at Less Cost

Stone and Webster Use Six Novo Hoists on Big Power House Job

SIX Novo LH Hoists are being used by Stone & Webster in constructing the new Philadelphia Electric Company plant at Philadelphia. This plant, one of the largest in the world, will have a generating capacity of more than a million horse power. The buildings are approximately 100 feet high. The Novo LH Hoists place form lumber and reinforcing steel in the upper stories.

Stone and Webster know industrial equipment. What they use must do the work. That is why they use Novo Hoists.

NOVO HOISTS—Single and double drum, electric motor and gasoline drive, for pile-driving, steel-setting, clamshell bucket, platform elevators, concrete chuting equipment, etc.

NOVO ENGINES—1½ to 40 H.P.

NOVO PUMPS—Centrifugal, diaphragm and force.

NOVO ENGINE CO.
Clarence E. Bement, Vice-Pres. & Gen. Mgr.
LANSING — MICHIGAN

New Community-Financed Hotel at Bradenton, Florida

On April 13, the Hotel Dixie-Grande at Bradenton, Fla., a community enterprise sponsored by the Board of Trade, was opened formally to the public. The hotel was financed by the Hockenbury System, Inc., of Harrisburg, Pa., and is operated by the Griner Hotels, Inc., of Jacksonville, Fla. The day's program on the opening included an inspection of the building by the directors and later by the stockholders of the Community Hotel Corporation and the public, a buffet luncheon for the directors, and a banquet in the evening, with addresses by Governor John W. Martin and other prominent guests.

Double-Unit Flusher

The savings which have been effected in street cleaning by the adoption of flushing have been remarkable. An eastern city which recently purchased additional flushing equipment reported through its Superintendent of Street Cleaning that the city more than paid for its entire street flusher equipment in the first year of its use by the abandonment of street sweeping and the necessary labor of patrolmen to pick up the sweepings after they had been thrown to the gutter by the sweepers.

Hvass double-unit flushers made by Chas. Hvass & Company, Inc., 508 East 19th Street, New York, are built with steel elliptical tanks of 600 to 1,800 gallons capacity with a 19-inch manhole on the top with removable cover and 2½-inch filling connection. A strainer pipe under the water inlet with a removable plug is inserted to keep out sediment. The tank also contains a separate compartment for supplying water to cool the pump motor. The housing encloses the motor and pump connected to the tank, giving the entire unit an appearance of symmetry. Hvass equipment does not project beyond the wheels or overhang the chassis frame at the rear.

The pump, mounted forward of the tank and across the chassis frame, is a single-stage centrifugal with 4-inch suction and 3½-inch discharge, and has a large bronze impeller with 1¼-inch diameter bronze bearing. The pump has a capacity of 500 gallons per minute at 45 pounds pressure at 1,000 r.p.m. The flusher engine is a 4-cylinder, 4-cycle, heavy-duty, slow-speed unit, which consumes about 10 gallons of gasoline and three pints of lubricating oil in eight hours. This engine delivers water at high pressure to the nozzles mounted on both sides, and about the middle of the truck and at the front of the truck. The nozzels are made of two pieces and are controlled by levers placed on the dashboard or at the side of the driver's seat.

According to the specifications, a 600-gallon tank will flush about 600 lineal feet of street with the truck traveling at 6 miles per hour and with three of the nozzles open. The 1,800-gallon tank will flush about 1,800 feet of street. Based on a hydrant pressure of 60 pounds, it requires about 3 minutes to fill a 1,200-gallon tank.

A One-Man Motor Grader with Interchangeable Wheels

Rapidly increasing attention to the proper maintenance of earth and gravel roads and a very rapid increase in snow removal in the northern states has created a need for more effective machinery for both kinds of work. The Galion Fordson-powered one-man motor grader has been developed by the Galion Iron Works & Manufacturing Company, Galion, Ohio, for this particular kind of work. The newest Galion one-man grader is known as the Galion "Standard." In this machine sturdy strength is secured by an 8-inch frame and extra reinforcement throughout. A 16-inch wheelbase adds to its effectiveness in smoothing roads, and 30-inch lift wheels give the operator extra leverage in lifting the blade with the machine-cut worm gear.

The operator is comfortably and safely seated where he can view all the work and the road ahead at a single glance. Both the seat and the steering wheel are easily adjustable to various operators.

This one-man motor grader can be equipped with regular Fordson wheels or with dual rubber-tired wheels in the rear, using any standard make. For heavier work any standard crawlers for the Fordson may be used. A new idea which will appeal to many road maintenance men is the use of Galion roller wheels in the rear. This will permit the grading and rolling of an earth road in one operation. By adjusting the blade the spoil can be thrown into the wheel ruts, and the roller wheels following will roll it down, packing the earth firmly and leaving a solid, smooth surface.

DOUBLE-UNIT FLUSHER, SHOWING ENTIRE EQUIPMENT INSIDE OF WHEELS AND COVER FOR PUMP RAISED

You Can Do— Like Kalamazoo

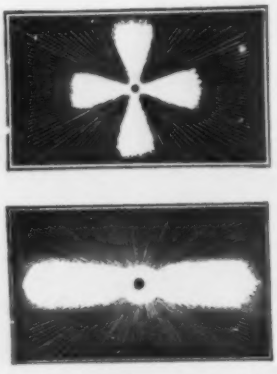
2½ Times as Much Light on the Street and $7,000.00 Saved Annually

A year ago Kalamazoo, Michigan, replaced 673 arc-lamps with Holophane 4-Way and 2-Way Refractors, at a total cost for the entire equipment of $11,600.00.

The result was a saving of $7,000.00 yearly in operating expense, and an increase of light on the street of two and one-half times. Reprints of an article from Electrical World describing the new Kalamazoo installation will be sent on request.

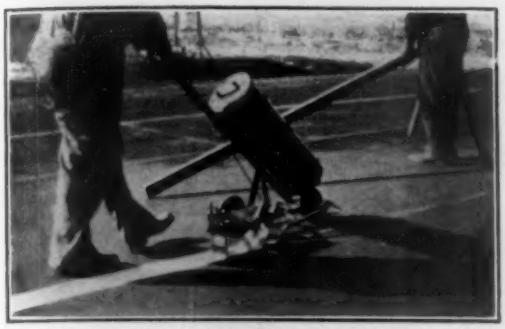
Our engineers will gladly tell you what Holophane can do in *your* community.

HOLOPHANE COMPANY
New York and Toronto



Light distribution, as seen from above, of Holophane 4-Way and 2-Way Refractors.

HOLOPHANE
DIRECTS LIGHT SCIENTIFICALLY



THE ZONE-LAC, A SIMPLIFIED TRAFFIC LINE-MARKING MACHINE

A New Road-Marking Machine

A new road-marking machine that has made astonishing records in the service of the street departments of some of the large cities of southern California, has been placed on the market by the J. E. Bauer Company, 1921 Mission Road, Los Angeles, Calif. This Zone-Lac street marker painted a traffic line 6 inches wide and 600 feet long in 10 minutes, using only 1 gallon of Zone-Lac Lacquer in the service of the Los Angeles County Road Department.

This machine, operated by one man, is thus shown to do easily in one day the work that would require five men to do by hand. It also does a better job, because there is no overlapping as in hand painting. Consequently, the paint takes only half as long to dry.

The Zone-Lac street marker is a portable, light, and easily operated machine and rapidly spreads a strip of lacquer as a traffic line by means of several easily adjustable and inexpensively replaceable brushes. It may be adjusted to paint a line from 2 to 12 inches in width. It is free from all complicated mechanism, is gravity-fed and hand controlled, and has a paint reservoir with a capacity of 5 gallons.

Thomson Meter Now a Subsidiary of Neptune

The Lambert water-meter will hereafter be handled by the Thomson Meter Corporation, a subsidiary of the Neptune Meter Company, 50 East 42nd Street, New York City, according to S. D. Higley, Secretary, Thomson Meter Corporation. New and up-to-date machinery will be installed, factory methods improved, and everything possible done to give more efficient service in the future than has been possible in the past. The present management intends to increase the production and improve the manufacture and sale of the Lambert products known to the trade as the Lambert meter, Lambert F. P. meter, current and duplex types.

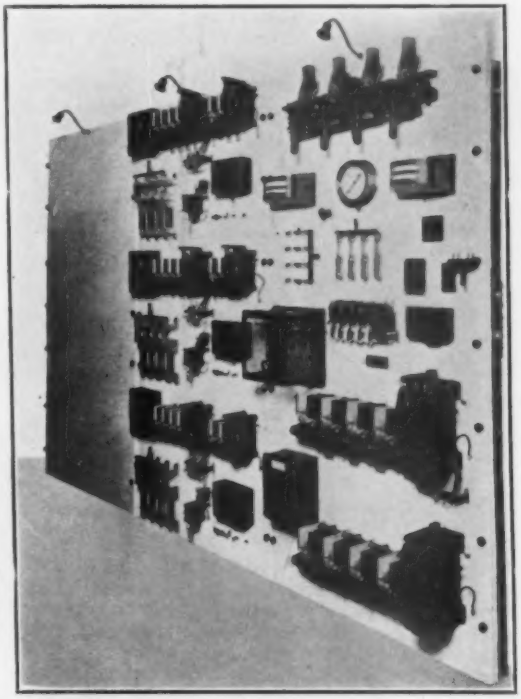
A Panel to Control Sewage Pumps

The panel shown in the accompanying illustration was built by the General Electric Company, Schenectady, N. Y., to control three 40-horsepower induction motors driving pumps in the Philadelphia sewage system, and to provide for switching two banks of transformers, which supply power for the motors.

Pumping is controlled automatically by means of pressure switches governing the number of motors in use. The power for running the three motors comes from two banks of transformers, one 50-kv.-amp. and the other 100-kv.-amp. By means of interlocks on the line contactors of each of the automatic starters, the 50-kv.-amp. transformer bank is connected to the panel whenever one motor only is running. When two motors are in use, the 50-kv.-amp. bank is disconnected and the 100-kv.-amp. bank is switched in. When all three motors are running, both banks of transformers are used.

The panel bases are of polished white Italian marble, each measuring 4 feet wide by 8 feet high. Two are now in use and a third is provided for future expansion. All apparatus is finished in dull black and polished copper, the name plates being porcelain. The copper bus work is polished and lacquered.

Among the devices mounted on the panels are three separate automatic resistance starters with current limit acceleration, pressure switches for control, and thermal relays for overload protection. After coming through the transformer contactors, the power goes through a four-pole air circuit-breaker which has an overload trip in each of the four circuits. In addition to the circuit breaker and transformer contactors, the panel has a volt-meter, an ammeter, a curve-drawing watt-meter, a watt-hour meter, a pressure gage, and an automatic starter for a 5-horsepower motor.



CONTROL PANEL FOR AUTOMATIC SEWAGE PUMPING INSTALLATION, SHOWING BLANK PANEL FOR FUTURE EXTENSIONS

Farey Made Montreal Manager

Robert W. Hunt & Company, Ltd., Montreal, Que., has announced the appointment of its chemical engineer, F. O. Farey, as Manager of its Montreal office. There will be no changes in the personnel of the offices in Toronto and Vancouver or in the conduct of the company's inspection and testing work.

4 Ways in Which the Barber-Greene Cuts Digging Costs

Digs More Feet Per Day

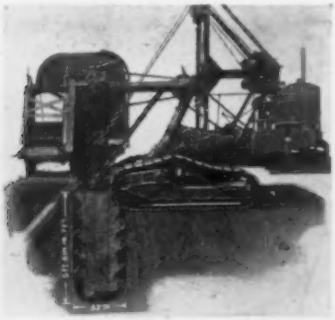
On pipe line work Barber-Greenes have consistently maintained records of from 5,000 to over 6,000 lineal feet per day. Nine digging speeds provide for equally fast work on tougher and deeper ditching.

For the complete story on Barber-Greene Digging Speed send for *Cutting Mains and Services.*

Cuts Service Laterals

The Barber-Greene Vertical Boom makes moving a quick and easy job. It can be pulled out of a trench, or started into one, in a minute. And it digs laterals flush with the main trench—and right up to the curb full depth and full depth down on the other side.

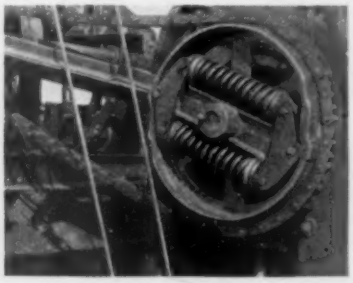
Cutting Mains and Services can give you the complete story on the Barber-Greene's ability to handle laterals and short run work at profit.



Shows Lower Costs

On a public service job in Texas, a Barber-Greene dug some 9,000 feet of ditch at a cost of 4 and 1–10 cents per lineal foot. This figure includes all possible digging charges—depreciation, operation, supervision, repairs, delays and maintenance time.

The figure of 4 and 1–10 cents per foot is about an average record—many Barber-Greene owners have shown lower ones. *Cutting Mains and Services* tells about Barber-Greene costs, too.



Overload Release Protects Ditcher

A Wisconsin trenching foreman once said of the Barber-Greene, "The d——n thing is almost human."

He had seen the Barber-Greene walk up to a hidden pipe—and stop digging before either the pipe or the machine was hurt. And he had seen the Barber-Greene peck at roots and stones until they came out.

The patented overload release does these things—how and why it does, are shown in *Cutting Mains and Services.* Send for a copy.

BARBER-GREENE CO. *Representatives* 515 W. Park Av., Aurora, Ill. *in Fifty Cities*

BARBER-GREENE

Portable Belt Conveyors · Self Feeding Bucket Loaders

Coal Loaders · Automatic Ditch Diggers · Coal Feeders

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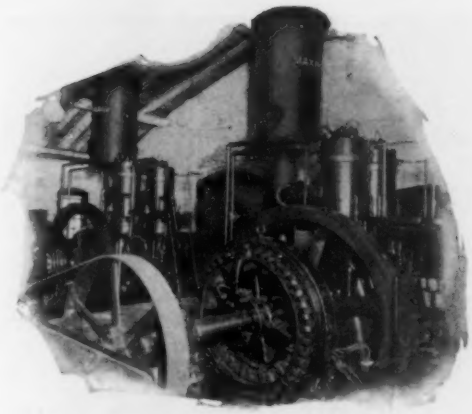

TWO 10-INCH MAXIM SILENCERS QUIETING EXHAUST NOISES AND PULSATIONS FROM TWO 100-H.P. DIESEL ENGINES IN THE POWER-PLANT OF THE TOWN OF MIDDLETOWN, DELAWARE

Do People Complain of Noise?

Very often municipal authorities are confronted with noise problems that seem impossible of solution except by drastic action. No official wants to arbitrarily force a manufacturer to close his plant or even to curtail operations because some machine produces an objectionable noise. Yet somehow the complaints of nearby residents must be satisfied. Not always is it the private manufacturer who is at fault. Sometimes it is the town or city itself that is operating the noisy machine. And the nearby residents have just as much right to complain against noises from the public plant as from the private plant. Yet the plant must operate.

Some machine noises cannot be silenced, but wherever possible they should be. This is especially true during hot weather when open windows seem to make the noises all the more objectionable. And those noises which continue day and night are the most annoying. However, noises from oil or gas engine exhausts and from compressor or blower intakes, noises from valve escapes and from uniflow engines—these noises can be silenced.

Take oil engines for instance: the exhaust noises from these engines are very disagreeable and often a nuisance. Such noises have two elements—one a "booming," which is caused by the sudden blast of exhaust gases against the atmosphere, and the other, the noise caused by the rush of high velocity gases in the exhaust system. With compressors and blowers a different set of noises is encountered. The intake to a reciprocating compressor produces an unpleasant snoring, while that to a rotary blower produces a whine. Both noises are extremely annoying to the ears and to the nervous system.

Then there is the element of air pulsations. These should not be confused with the mechanical vibrations of the machines. These air pulsations have been known to rattle windows a quarter of a mile away. Just recently a prominent New York contractor was faced with the alternative of shutting down unless he could stop the vibrations caused by the air pulsations from the intakes to two 1,300-foot compressors. Exhausts from internal combustion engines produce similar results.

It is not uncommon for operators of oil or gas engines to try to quiet them by exhausting into either pits or mufflers. Such devices not only are not effective noise-silencers but almost invariably produce an adverse effect upon the efficiency of the engine by building up back pressure. Mufflers, for instance, have baffles and obstructions for the express purpose of hindering the gas flow so that it will not burst upon the atmosphere. Pits are really chambers with a confined and more or less inert body of gas which acts as a cushion to build up pressure. Also pits are invariably wrecked should gas explosions occur in them.

The Maxim Silencer, designed and perfected by Hiram Percy Maxim, found its inception in the well-known Maxim Gun Silencer. The Maxims in their long study of sound waves saw a chance of applying the ideas used in the Gun Silencer to industrial noises. While the ideas in the Gun Silencer engendered the industrial Silencer, the principle of design is radically different. The Maxims recognized that the hindering of gases in a rifle discharge would have no effect on the bullet flight, but that the obstruction of exhaust gases in the case of an oil engine would have a serious adverse effect on the efficiency of the engine.

This they kept well in mind in designing the industrial Silencer. In effect, this Silencer is a long pipe contracted into a compact unit. The long spiral passageway produces a pulling power on the exhaust manifold that would be like the pulling power of a long pipe. Yet this Silencer eliminates the noise, where a long pipe would amplify it. The elimination is in effect a trapping out by repeated reflections of the sound wave, which is entirely independent of the unhindered gas flow. In the case of compressors or blowers, the Silencer acts to smooth out the flow of air, at the same time trapping out the sound wave.

The practical value of the Maxim Silencer has long since been proved by the several thousands of installations, quieting machines ranging from 10-foot compressors to 3,000-h.p. diesel engines. It is merely a case of adapting the right model and size to the machine in question.

There is little trouble in installing a Silencer, for the position makes no difference in its performance. It may be installed vertically, horizontally, or at an angle to accommodate the room available. The only point to keep in mind is to allow sufficient head room to permit the withdrawal of the silencing unit for periodic cleaning of oils and carbons which may accumulate.

It is essential that all the mechanical details of the machine be known before the proper Silencer can be selected. It makes considerable difference whether the engine be two-cycle or four-cycle or the compressor be reciprocating or rotary. Each machine, while essentially a noise producer, has its individual characteristics, and these must be made known to the manufacturers of the Maxim Silencers.

Sometimes the noise may be unusual, but if it is an air, gas or steam noise, the Maxim Silencer Company, 105 Homestead Ave., Hartford, Conn., will be glad to advise on the possibilities of quieting it.

CITY OF
ROCK ISLAND
ILLINOIS

"IN THE HEART OF EVERYTHING"

W. A. ROSENFIELD
Mayor

Sept. 25, 1925.

The King Company,
Chicago, Illinois.

Gentlemen:-

The King posts installed by the City of Rock Island in the new "Whiteway" system have given us wonderful satisfaction and the type selected has met with the approval of not only our own citizens, but visitors. The posts were selected by a committee of property owners and the Board of Local Improvements adopted them by unanimous vote.

Rock Island, as you may know, is the first city in this part of the country to adopt a new Whiteway Lighting System and our sister cities are now following our example. Rock Island's business district is the best lighted in the country.

I am writing this letter to let you know how pleased we are with the new system, which includes the King Posts.

Yours very truly,

W. A. Rosenfield, Mayor

WAR-M

The East-West Gateway

In

Rock Island

the action of the Committee of Property Owners and Board of Local Improvements in selecting King Standards was in recognition of their qualities of beautiful design, long-life usefulness and low-cost maintenance.

FOR SUPER-STRENGTH
KING

Your City, Too, Can Have Well-Lighted Streets

Write today for the complete information you will find in *free* Design Book No. 100

KING COMPANY

The World's Foremost Manufacturer of Street Lighting Standards

230 South Clark Street Chicago, Ill.

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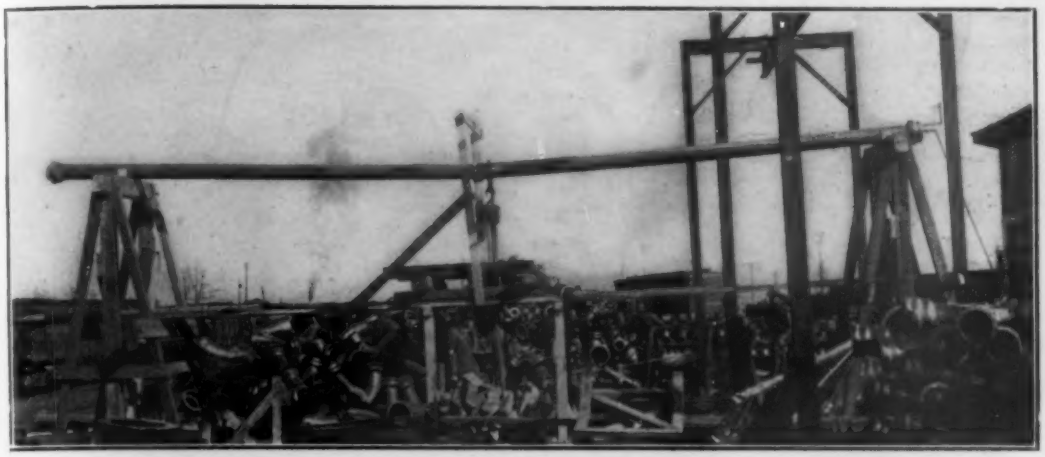
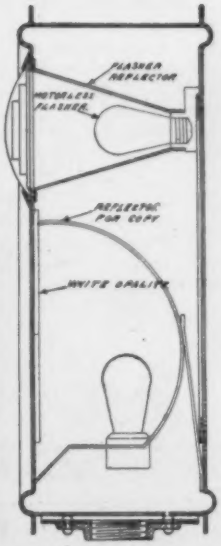


A CROSS BENDING TEST OF MONO-CAST CENTRIFUGAL CAST IRON PIPE LINE

Many tests have been made by the American Cast Iron Pipe Company, Birmingham, Ala., on Mono-Cast centrifugal pipe to secure reliable comparative tests and photo-micrographs. It has been found that the chill on the outside of the sand cast pipe is much deeper than on Mono-Cast, but that the graphite formation in the middle of the Mono-Cast pipe is not so coarse and has not the tendency to form a continuous network as in the sand cast pipe. Ralph R. Silver, Manager, Department of Statistics and Public Service, states that Mono-Cast pipe has much greater uniformity of structure throughout the section than sand cast pipe, indicating that the casting was not formed under strain and the crystallization proceeded normally from outside to inside where any foreign bodies are rejected from the walls. In a casting cooling from both sides toward the middle, such inclusions are caught and held, thus forming a plane of weakness at that point

THE NEW LYLE BOULEVARD STOP SIGNAL



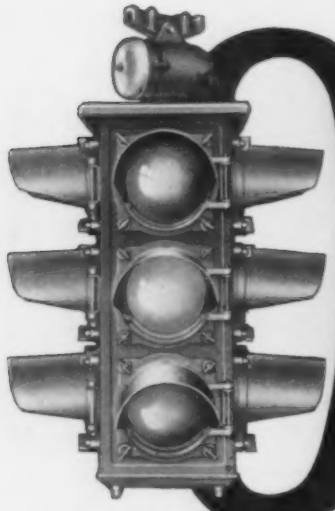
ILLUMINATING AND FLASHING UNITS OF LYLE BOULEVARD STOP SIGNAL

A Day and Night Boulevard Stop Signal

The latest member of the family of traffic control signals manufactured by Lyle Signs, Minneapolis, Minn., is a boulevard stop sign with electrically illuminated letters and flashing red signal light. The sign is made of extra-heavy Armco rust-resisting iron with the letters carved clear through the metal. Heavy opalite glass is securely fastened back of the letter. Electric current can be taken from high-voltage power transmission lines. This new sign is well made, having strength to stand the hardest use, and is rigidly attached to a heavy pipe standard.

Steel Pipe Manufactured by Arc Welding

At a guaranteed cost reduction of $3,000,000 actual work has been started on the fabrication and laying of the steel pipe for the new pipe line which will carry the entire water-supply of Oakland, Calif., for a distance of 90 miles through the mountains from the Mokelumne River. The Lincoln Electric Company, Cleveland, Ohio, originators of the Stable-Arc welding process, state that the entire



One Sure Way to Reduce Traffic Fatalities

OF the number of people killed this year 75% will die under the wheels of automobiles in the streets of American Cities. Rural road collisions, upsets, grade-crossing accidents and smash-ups with street cars kill only 25% of the annual toll. The greatest hazard, on the basis of authentic statistics, is walking—some call it "Jay-walking"—across the street.

Upon request we will send this booklet full of interesting facts — FREE.

NEARLY half the victims are children whose lives are snuffed out while playing in the streets or crossing thoroughfares en route to and from their homes.

THERE is only one way to reduce automobile fatalities! That is to *prevent* automobile accidents!
You can help make your streets and highways *safe* for both pedestrians and motorists by the use of efficient and economical—

TOKHEIM TRAFFIC CONTROL SIGNALS

TOKHEIM OIL TANK & PUMP CO.
Fort Wayne, Ind.

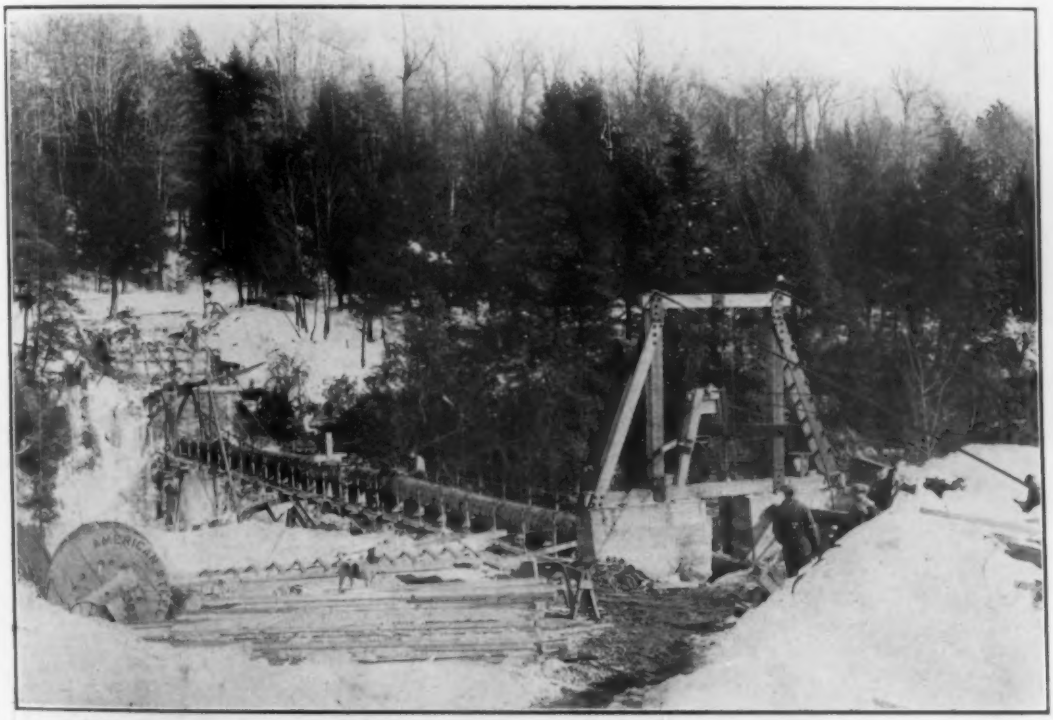
saving of $3,000,000 has been made possible through the fabrication of all of the steel pipe by this electric welding process. At a price approximately 35 per cent less than bid by firms specifying other types of steel pipe, the contract was awarded to the Steel Tank & Pipe Company, West Berkeley, Calif., with the provision that the Stable-Arc welding be used for connections throughout fabrication.

On the 15th of February the first sections of the 30-foot, 65-inch diameter pipe of steel plate varying in thickness from 3/8- to 5/8-inch were completed by the electric welding process. On March 5, after they had been subjected to a wide variety of tests, the first sections were laid in the prepared test trenches and then joined by hand welding. Each section of the welded pipe is being tested by hydraulic pressure up to nearly the elastic limit of the steel itself. While under such tension, every foot of the welding was struck with a 19-pound sledge, all of the welded sections coming through without failure.

A New 48-Box Police Signaling System

The work of installing the new police signaling system at Knoxville, Tenn., has just been completed by the Gamewell Company, Newton Upper Falls, Mass. This installation contains 48 signal boxes, 48 flashlight controllers, a similar number each of recall lights and horns, and Type-B central office equipment. The signal boxes are of the Exemplar type and provide a means for transmitting three distinct calls—one for duty reports, one telephone, and one for emergency or wagon. The flashlights are equipped with red fresnal lenses, and the recall horns produce a sound of sufficient volume to be heard above traffic noise. Each recall unit is controlled by a controller box, the mechanism of which is actuated by means of a recall transmitter located at police headquarters.

The central office equipment consists of a Type-B desk, on which are mounted six patrol circuits, one primary flashlight panel, two secondary flashlight panels, five telephone circuits, two test panels, one charging panel, one clock, one transmitter, one 6-circuit register, one time and date stamp, one take-up reel, one desk telephone set, eighteen protectors, and one flashlight resistance unit. The desk itself is of art metal with an olive finish. The electrical energy required for operating this equipment is derived from 180 cells of F. I. P. batteries mounted on a 90-inch four-shelf battery rack. A motor generator is used for charging the battery.



COMPLETING THE SUSPENSION BRIDGE TO CARRY AN EMERGENCY WOOD STAVE PIPE ACROSS A DEEP GORGE FOR THE UTICA, N. Y., WATER-SUPPLY

This photograph, furnished through the courtesy of F. E. Beck, Chief Engineer, Consolidated Water Supply Company, Utica, N. Y., shows the workmen completing the wood stave pipe on the suspension bridge made of American Steel & Wire Company's cable. Inasmuch as most of this work was done in zero weather and had to be rushed because of the dwindling reserve supply, it is generally considered by water-works men as one of the finest pieces of emergency work in the last few years, both on the part of manufacturers supplying equipment and on the part of the admirable organization of the water-works which did the actual work of installation

When writing to Advertisers please mention THE AMERICAN CITY—Thank you.